This item is likely protected under Title 17 of the U.S. Copyright Law. Unless on a Creative Commons license, for uses protected by Copyright Law, contact the copyright holder or the author.

Access to this work was provided by the University of Maryland, Baltimore County (UMBC) ScholarWorks@UMBC digital repository on the Maryland Shared Open Access (MD-SOAR) platform.

Please provide feedback

Please support the ScholarWorks@UMBC repository by emailing scholarworks-group@umbc.edu and telling us what having access to this work means to you and why it's important to you. Thank you.

This is the author's accepted manuscript without copyediting, formatting, or final corrections. It will be published in its final form in an upcoming issue of The American Naturalist, published by The University of Chicago Press. Include the DOI when citing or quoting: https://doi.org/10.1086/722797. Copyright 2022 The University of Chicago.

The geography of sexual conflict: a synthetic review

Ryan Bacon[1], Dante Washington[1,2], Maya-K Johnson[1,2], Mercedes Burns[1*]

1. Department of Biological Sciences
   University of Maryland, Baltimore County
   Baltimore, MD 21250
2. Louis Stokes Alliance for Minority Participation Undergraduate program
   University of Maryland, Baltimore County
   Baltimore, MD 21250

From the symposium "The Power of Sexual Selection" presented at the joint virtual meeting of the American Society of Naturalists, Society for the Study of Evolution, and Society for Systematic Biology on June 22nd, 2021

*Email: burnsm@umbc.edu

ORCID

Bacon: 0000-0001-9361-8835

Burns: 0000-0002-9450-8563

Keywords: Sexual conflict, tropical biomes, temperate biomes, systematic review

This is the author's accepted manuscript without copyediting, formatting, or final corrections. It will be published in its final form in an upcoming issue of The American Naturalist, published by The University of Chicago Press. Include the DOI when citing or quoting: https://doi.org/10.1086/722797. Copyright 2022 The University of Chicago.

ABSTRACT

Sexual conflict is a mechanism of selection driven by the divergent fitness interests between females and males. This disagreement can be great enough to promote antagonistic/defensive traits and behaviors. Although the existence of sexual conflict has been identified in many species, less research has explored the conditions that initially promote sexual conflict in animal mating systems. In previous works on Opiliones, we observed morphological traits associated with sexual conflict only occurred in species from northern localities. We hypothesized that, by shortening and compartmentalizing time periods optimal for reproduction, seasonality represents a geographic condition sufficient to promote sexual conflict. We conducted a systematic review of literature on reproductive traits and behaviors. Using standardized criteria, we reviewed publications to identify whether subjects occurred in a temperate (high seasonality) or tropical (low seasonality) biome. After identifying and adjusting for a publication bias towards temperate research, we identified no significant difference in the strength of sexual conflict between temperate and tropical study systems. A comparison between the distribution of taxa studied in sexual conflict papers and papers focused on general biodiversity indicates species with conflict-based mating systems more accurately represent the distribution of terrestrial animal species. These findings contribute to ongoing efforts to characterize the origins of sexual conflict, as well as life history traits that co-vary with sexual conflict.

This is the author's accepted manuscript without copyediting, formatting, or final corrections. It will be published in its final form in an upcoming issue of The American Naturalist, published by The University of Chicago Press. Include the DOI when citing or quoting: https://doi.org/10.1086/722797. Copyright 2022 The University of Chicago.

Introduction

Sexual conflict was first described in a 1966 book titled "Adaptation and Natural Selection" by George C. Williams. Some debate over the exact meaning of the term exists, however, for some researchers, sexual conflict describes a mechanism of selection rooted in the conflict between the different fitness interests of males and females (Scharer et al. 2012; Michalczyk et al. 2011; Kaneshiro 2009; Pizzari & Snook 2007; Parker 2006; Arnqvist & Rowe 2005; Pizzari & Snook 2003; Parker 1979). Sexual conflict is broadly categorized as inter- or intra-locus depending on the specific mechanism through which the conflict is generated (Schenkel et al. 2018). Both forms of sexual conflict arise from differences in sex-specific fitness optima: intralocus conflict is due to shared genetic architecture while interlocus sexual conflict involves alleles at different loci (Schenkel et al. 2018). In one common example of interlocus sexual conflict, males and females "disagree" over the mating rate. The optimal mating rate of males is often higher than that of females. Females maximize their fitness by being selective with their gametic investments, and males, often unable to assess their paternity, encourage mating and ensure fertilization (Kaneshiro 2009). In this case both sexes cannot achieve their maximum fitness simultaneously, so a mutual resolution is impossible. One possible outcome of this conflict is sexually antagonistic coevolution (Parker 2006; Pizzari & Snook 2003). Within sexually antagonistic coevolution, males and females can become locked in an arms race, each evolving traits that come at a fitness cost of the other sex (Parker 2006; Arnqvist & Rowe 2005; Arnqvist & Rowe 2002; Clutton-Brock & Parker 1995). This can appear in the form of male traits that aid in controlling and coercing a female into mating, and female defensive traits meant to avoid male coercive interactions (Arnqvist & Rowe 2002; Clutton-Brock & Parker 1995). Despite the historically mutualistic and cooperative view of reproduction, sexual conflict and sexual coercion are relatively prevalent and occur in a wide variety of species (Arnqvist & Rowe 2005; Chapman et al. 2003; Rice 2000; Parker 1979).

This is the author's accepted manuscript without copyediting, formatting, or final corrections. It will be published in its final form in an upcoming issue of The American Naturalist, published by The University of Chicago Press. Include the DOI when citing or quoting: https://doi.org/10.1086/722797. Copyright 2022 The University of Chicago.

According to the Web of Science database, prior to 1990, fewer than 5 publications each year mentioned the term “sexual conflict” (Supplemental Fig. S1). Despite 2,580 publications since 1968 that mention or otherwise utilize this term, interest in sexual conflict did not increase until the 1990s (Parker 2006; Pizzari & Snook, 2003). This lack of attention means that many important aspects of conflict, such as the effects of different environmental pressures, are poorly understood (Plesnar-Bielak & Lukasiewicz 2021; García-Roa et al. 2020; De Lisle et al. 2018; Parker 2006; Pizzari & Snook 2003). Previous work in Opiliones, also known as harvesters or “daddy-longlegs”, has indicated a possible role of breeding season in the evolution of conflict (Burns et al. 2012). Features and traits specifically associated with coercive mating and interlocus sexual conflict (Burns & Shultz 2015), are restricted to temperate species of harvesters, while tropical species are almost exclusively cooperative (Burns et al. 2012). The absence of coercive mating in tropical regions and its restriction to temperate regions supports the idea that a shorter breeding season contributes to conflict. Similarly, it has been proposed that cyclical environmental changes may allow sexually antagonistic selection on loci to persist (Connallon & Hall 2016). Observations of the multiple, phylogenetically independent, and geographically organized transitions to coercive mating in temperate species of harvesters, combined with Connallon & Hall’s proposal, drives the hypothesis that length of the breeding season plays a significant role in the evolution of sexual conflict in mating systems (Burns et al. 2012). It is hypothesized that shorter breeding seasons constrain the time available to find and court a receptive mate and reproduce. This leads males to evolve coercive mating strategies. To date, relatively few studies have evaluated any connections between conflict and climate, specifically the effects of differences in the length of the breeding season (García-Roa et al. 2020).

This is the author's accepted manuscript without copyediting, formatting, or final corrections. It will be published in its final form in an upcoming issue of The American Naturalist, published by The University of Chicago Press. Include the DOI when citing or quoting: https://doi.org/10.1086/722797. Copyright 2022 The University of Chicago.

Sexual conflict driven by evolution in phenology

Certain abiotic factors have important repercussions for the lifespan and activity of terrestrial animals. Colder temperatures limit their dispersal and constrain their activity (Machado et al. 2016; Chown & Nicholson 2004). In these organisms, metabolism decreases as they near the lower limit of their temperature tolerance range (Block et al. 1990). This becomes important when considering seasonality which, in more northern latitudes, can determine the life cycle, specifically the breeding season (Machado et al. 2016; Zerbe et al. 2012). Temperate and more northerly locations which encounter high seasonality are likely to experience a shorter effective breeding season (Machado et al. 2016; Buzzato et al. 2013; Zerbe et al. 2012). Conversely, animals in southern latitudes and habitats with less seasonality are likely to experience a longer breeding season. In Opiliones, for example, previous studies which investigated a number of genera and species have identified certain factors that control the breeding season. The length of the breeding season is determined by an interaction between the number of months with appropriate levels of precipitation (humidity) and temperatures above the lower tolerable limit in Opiliones (Machado et al. 2016; Buzzato et al. 2013; Buzzato & Machado 2008). The length of the breeding season itself has been shown to positively correlate with the frequency of resource defense polygyny - a mating system in which males defend territories or resources in an attempt to control or secure mating (Machado et al. 2016; Buzzato & Machado 2008). Species of harvesters in colder areas which experience shorter breeding seasons are more likely to exhibit scramble competition polygyny in which males do not defend females or resources (Machado et al. 2016).

While the breeding season has been shown to have a significant effect on the mating system, no studies have yet definitively connected breeding season to sexual conflict (Perry & Rowe 2018). However, sexual selection has been broadly connected to different aspects of climate and seasonality (García-Roa et al. 2020). Sexual dimorphism, a potential morphological indicator of sexual selection, has been linked to the type of mating system in harvesters

This is the author's accepted manuscript without copyediting, formatting, or final corrections. It will be published in its final form in an upcoming issue of The American Naturalist, published by The University of Chicago Press. Include the DOI when citing or quoting: https://doi.org/10.1086/722797. Copyright 2022 The University of Chicago.

(Machado et al. 2016). Harvester species with a resource defense polygyny mating system exhibited a stronger degree of sexual dimorphism, specifically those structures involved in male-male antagonistic interactions (Machado et al. 2016). The link between mating system and sexual dimorphism, combined with the correlation between mating system and breeding season length, suggests a possible connection between sexual selection and the length of the breeding season (Machado et al. 2016; Buzzato & Machado 2008). In previous work in *Nephila plumipes*, the strength and direction of selection was noted to fluctuate throughout a breeding season, highlighting the impact of seasonality on selection (Kasumovic et al. 2008).

The few studies that have investigated the specific effects of seasonality on sexual selection concluded that male-biased sexual size dimorphism was correlated with the seasonality of reproduction (Heldstab 2021; Zerbe et al. 2012). Species with a stronger seasonal component to reproductive cycles had a greater degree of male-biased sexual size dimorphism (Heldstab 2021; Zerbe et al. 2012). The proposed explanation for this trend aligns with our hypothesis, in that female monopolization, and male-male interactions, are more likely to evolve in species with a shorter breeding season (Heldstab 2021). Female monopolization occurs in polygamous mating systems when females or resources are aggregated in such a way that defending or monopolizing them is possible (Emlen & Oring 1977). Additionally, the degree of breeding synchrony, and number of reproductive events may play a significant role in sexual dimorphism (Emlen & Oring 1977). It appears that a reduced mating season may constrain multiple animal mating systems in a similar way.

We chose to evaluate the contribution of seasonality to the strength of sexual conflict by performing a systematic review of existing reproductive research studies. A recent investigation of biodiversity publications served as inspiration for this project and the choice in methods (Titley et al. 2017). In order to investigate any biases in biodiversity studies between temperate and tropical regions, Titley et al. 2017 performed a meta-analysis and identified both the region that the study occurred in as well as the taxa studied. Taking that paper as inspiration we chose

This is the author's accepted manuscript without copyediting, formatting, or final corrections. It will be published in its final form in an upcoming issue of The American Naturalist, published by The University of Chicago Press. Include the DOI when citing or quoting: https://doi.org/10.1086/722797. Copyright 2022 The University of Chicago.

to investigate studies of sexual conflict between temperate and tropical regions. While the types of data used to establish conflict vary widely, making a true meta-analysis difficult, our aim was to provide a synthesis of the current state of sexual conflict publications and evaluate our hypothesis: If the length of the breeding season plays a significant role in the evolution of sexual conflict, then we expect sexual conflict to be more common in regions which experience high seasonality and a shorter breeding season. This would include regions experiencing a temperate climate, and we would expect that species experiencing sexual conflict in temperate regions should be more affected than those occurring in tropical regions.

Biases in temperate publications

In order to properly evaluate any differences in the effects of conflict between biomes, it is important to first evaluate any publication biases that may be present (Côté & Jennions 2013). Publication bias in ecology has received increasing research interest. An earlier ecological meta-analysis (Titley et al. 2017) suggests there is a current research bias towards vertebrate species and temperate countries in animal biodiversity papers compared to the described proportion in taxonomic groups in animals and their geographic distribution (Mora et al. 2011). The reasoning behind this temperate bias could be attributed to the economic or political state of the countries in which these studies were performed. The number of papers on biodiversity in a country shared a positive relationship with its nominal Gross Domestic Product (Titley et al. 2017), suggesting that the wealth of a nation heavily influences where research is done. Temperate regions may be more accessible to researchers in the Global North, and these regions are likely more familiar (Zuk 2016). In contrast, tropical countries often had few to no lead authors and averaged lower GDPs than temperate countries (Titley et al. 2017). These temperate biases, if present in studies of reproduction, could produce results that spuriously identify correlations between conflict and temperate biomes. In order to ensure that our results are meaningful, any bias towards temperate biomes must be accounted for in our results.

This is the author's accepted manuscript without copyediting, formatting, or final corrections. It will be published in its final form in an upcoming issue of The American Naturalist, published by The University of Chicago Press. Include the DOI when citing or quoting: https://doi.org/10.1086/722797. Copyright 2022 The University of Chicago.

In this paper, we detail the process and results of a systematic review of reproductive biology literature spanning over a half century of research in temperate and tropical animal systems. We use the results of this review to sub search papers that indicate sexual conflict to be a significant mechanism in the evolution, reproductive behavior, and/or mating systems of study species. We similarly evaluate the general effect of lifespan and/or motility on the author-defined strength of conflict by categorically rating the lifespan and motility of each study species and then comparing the importance of conflict across those categories, as these variables may be important in the evolution of sexual conflict (Connallon 2015; Adler & Bonduriansky 2014; Bonduriansky 2014). While we quickly identified that the publication bias towards temperate studies swamped out any evidence of a correlation between temperate biomes and great incidence of sexual conflict, we did discover the distribution of taxa affected by sexual conflict mirrors the distribution of terrestrial animals. We complete the paper by discussing potential experimental methods to examine the origins of sexual conflict within species or populations.

Methods

Publication search

To evaluate any bias between temperate and tropical publications, we performed a systematic review (Fig. 1). The databases Web of Science, Academic Search Ultimate, and Agricultural and Environmental Science Collection were utilized to identify academic publications. These databases were selected because they allowed the use of a single search string, and they contained the highest numbers of applicable publications. Identifying suitable publications required the creation of a specific search string which targeted studies that focused on reproductive and mating behavior in natural or wild populations. This search string eliminated unwanted topics and organisms, such as papers that dealt with maternal behavior. Maternal behavior publications were categorically eliminated because of the high proportion of papers that focused on humans. While parental investment is a source of sexual conflict, our focus is

This is the author's accepted manuscript without copyediting, formatting, or final corrections. It will be published in its final form in an upcoming issue of The American Naturalist, published by The University of Chicago Press. Include the DOI when citing or quoting: https://doi.org/10.1086/722797. Copyright 2022 The University of Chicago.

on mating system evolution, and precopulatory traits may prove to be more significant to the evolution of mating systems (Wensing et al. 2017). Furthermore, many aspects of maternal behavior are a product of, but not definitely related to, the act of mating. The search string was created through an iterative process, during which we identified key words and phrases from "model" publications across the three databases. Our search string was deemed "complete" once further revisions did not result in any appreciable decrease in the number of results across all databases.

The completed search string ("reproduct* behavior" and "mat*" and "population*" not "maternal") was then used in each of our databases. Only experimental and observational academic studies published between 1966 and 15 January 2021 were considered. The year 1966 was used because it was the year that the term "sexual conflict" was first published in an evolutionary context (Fig. S1; Williams 1966). This date was selected to ensure that our sample papers were all from a time period when sexual conflict publications were also possible. The end date of 15 January 2021 represents the date at which the paper search was completed, and the sample papers were collected. This serves as the last possible publication date included within our study, although we cite more recent papers in this publication. Papers from our search of the three selected databases were transferred to the citation management software Endnote Online (Clarivate) for the primary and secondary reviews.

Publication review

The papers that were analyzed were evaluated on five criteria. (1) Is the paper an originally published observational or experimental study? If the paper was not observational or experimental (i.e., a review document), it was eliminated from the set. (2) Is the paper reproduction focused? This included, but was not limited to, papers discussing sexual conflict, breeding behavior, mating calls and signals, sexual selection, and reproductive morphology. If these topics were not discussed, papers were removed from analysis. (3) Does this study focus

This is the author's accepted manuscript without copyediting, formatting, or final corrections. It will be published in its final form in an upcoming issue of The American Naturalist, published by The University of Chicago Press. Include the DOI when citing or quoting: https://doi.org/10.1086/722797. Copyright 2022 The University of Chicago.

on or use wild organisms? If the organisms of study were human or entirely farm or laboratory-raised for greater than 3 generations, the paper was removed from analysis. (4) Was the study performed in a biome of interest? Due to the complexities of assessing seasonality for arctic, desert, and marine biomes, we removed papers that focused on organisms endemic to these regions.

Lastly, (5) does the study take place in a temperate or tropical biome (as assessed using Google Earth and a biome map from figure 49.11 in Freeman et al. 2017). Papers that qualified as “Temperate” featured research in temperate forests, temperate grasslands, Mediterranean forests, temperate coniferous forests, or montane grasslands. Papers characterized as “Tropical” included systems located in tropical wet forests, tropical dry forests, tropical coniferous forests, or tropical grasslands. Using geographic data from each paper, we sorted publications into temperate and tropical subsets. Studies that focused partially in either biome of interest were retained for analysis if the other qualifying criteria were also met. In addition, studies focusing on qualifying migratory organisms were retained based on where their reproduction occurred. All papers were double screened by separate reviewers to decrease bias towards our initial evaluation decisions. Each paper from the “Temperate” and “Tropical” sets was sorted into a spreadsheet (see Table S1) based on their biome, to check and confirm their suitability and record their study locations, lead author institution or affiliation, and lead author location. Papers that raised questions about their suitability were evaluated by another reviewer, as well as papers with outdated country information.

To identify studies implicating sexual conflict as a mechanism of importance to reproductive evolution, behavior, and/or mating system of the study species, we used the Endnote online search option to find the term “sexual+conflict” in titles of abstracts from the reviewed temperate and tropical reproductive biology papers we had previously screened. For the purposes of this analyses, we took a broad view of sexual conflict and did not differentiate between intra- and interlocus conflict; however, we recognize that our search string and

This is the author's accepted manuscript without copyediting, formatting, or final corrections. It will be published in its final form in an upcoming issue of The American Naturalist, published by The University of Chicago Press. Include the DOI when citing or quoting: https://doi.org/10.1086/722797. Copyright 2022 The University of Chicago.

review criteria may exclude papers focused on intralocus conflict. Papers that lacked accessibility at our institution but included "sexual+conflict" in the title or abstract (N=2) were requested through interlibrary loan and reviewed by RB. A total of 61 sexual conflict papers were identified. Twelve of these papers were studies of the same animal system, and four papers provided results on multiple species. In total we reviewed research on 61 total animal systems, which we also called "sexual conflict species".

To define the effect of sexual conflict on each animal system, we used the following criteria to develop a qualitative metric of sexual conflict. We ranked the importance of sexual conflict to the evolution or mating system of the species based on the authors' findings. If sexual conflict was deemed to be the most important mechanism responsible, the system was given a rank of "2." If sexual conflict was deemed to be present but other mechanisms of sexual selection, were equally or more prominent to the study, a rank of "1" was made. A rank of "0" corresponded to studies where sexual conflict was discussed but no determination of its importance was given, and a rank of "-1" was given for studies where sexual conflict was not found by the researchers (Table S1). The sexual conflict metrics (SCMs) were averaged for temperate and tropical species, and for species with multiple studies. Comparisons of sexual conflict across taxonomic differences in lifespan and range size were done by roughly classifying the lifespans as short or long, and the range sizes as small, medium, and large. As an example, arthropod lifespan and range size were deemed to be short and small, respectively, while avian range size was considered large.

Statistical analyses

To evaluate publication biases between temperate and tropical studies, we compared the numbers of temperate and tropical papers within our accepted sample to previous studies on the number of described species (Mora et al. 2011), and to the number of biodiversity studies within these same regions (Titley et al. 2017). This was done using a chi-square test.

This is the author's accepted manuscript without copyediting, formatting, or final corrections. It will be published in its final form in an upcoming issue of The American Naturalist, published by The University of Chicago Press. Include the DOI when citing or quoting: https://doi.org/10.1086/722797. Copyright 2022 The University of Chicago.

Subsequent analysis of SCMs used a weighted t-test approach to account for biases between temperate and tropical research. After reviewing SCMs, a Shapiro-Wilk test and subsequent nonparametric Wilcoxon rank-sum tests were used to assess normality and compare the distribution of described study species in sexual conflict publications to the described species from Titley et al. (2017).

Results

Preferred reporting items for systematic review and meta-analysis (PRISMA)

Our initial search identified 7,640 papers, of which 1,964 papers were deemed appropriate for this project and were included in our statistical analyses (Fig. 1). During both the initial and secondary review process we rejected a total of 5,676 papers. In order to quantify the relative frequency with which papers were rejected for the various reasons above, we recorded the reasons and frequency of rejection from 100 of the total number of reviewed papers (Fig. 1). This random sample was collected from the 7,640 papers included in our initial results. The largest percentage of rejected papers were those that investigated an inapplicable organism such as humans or marine organisms (63.4%), and those that were non-experimental studies such as reviews or theoretical papers (21.9%) (Fig. 1). A small subset of rejected papers (7.3%) were those that did not specifically mention a study site or were otherwise inaccessible. This subset of papers was rejected because an accurate description of the exact study or collection site was needed to assign a biome to the publication. Many countries contain both temperate and tropical regions and it would be difficult to ascertain location from the species studied. Following the secondary review, the final accepted 1,964 papers, comprising 1,290 categorized as temperate and 674 categorized as tropical (Fig. 1), were used as the sample set in which we would evaluate studies of sexual conflict.

This is the author's accepted manuscript without copyediting, formatting, or final corrections. It will be published in its final form in an upcoming issue of The American Naturalist, published by The University of Chicago Press. Include the DOI when citing or quoting: https://doi.org/10.1086/722797. Copyright 2022 The University of Chicago.

Publication bias towards temperate reproductive biology papers

Following the second review of all papers, where we recorded data on the study country and first author affiliation, we compared paper counts from temperate and tropical biomes to previous studies of described species (Mora et al. 2011) and biodiversity (Titley et al. 2017) in the same geographical regions. Using a chi-squared test, we found significantly greater (χ^2=3001.8, df=4, p<0.0001) proportions of biodiversity and reproductive biological studies were performed in temperate systems as compared to the proportion of animal species actually occurring in temperate regions (Fig. 2). Using the location details from publications, we found that not only do reproductive studies appear to be biased towards temperate regions, but certain study (and lead author) locations appear in much higher proportions than others (Figs. 3a; S2).

Sexual conflict publications

A total of 61 (temperate: 53, tropical: 8) sexual conflict species were identified, and we further evaluated these for author and study species location (Fig. 3b), as well as taxonomic group (in the style of Titley et al. 2017). To account for temperate publication bias in the analysis of sexual conflict papers, we calculated weights by dividing the expected proportion of studies given random selection (0.2 temperate, 0.8 tropical) by the proportion of temperate and tropical reproductive biology publications we found. These weights (temperate=0.2/0.658; tropical=0.8/0.342) adjust the proportions of sexual conflict species found by the bias that already exists toward temperate publications and study species.

After calculating weights to properly assess any correlation between sexual conflict and geography, a weighted t-test revealed no statistically significant difference between adjusted SCMs of temperate and tropical species (Fig. 4; t=0.72, df=10.98, p=0.487). This means that after accounting for publication bias, we did not see a significantly higher sexual conflict metric in temperate biomes with high seasonality. However, when comparing the proportions of sexual conflict study taxa to described terrestrial species and species diversity studied from 2011-2015

This is the author's accepted manuscript without copyediting, formatting, or final corrections. It will be published in its final form in an upcoming issue of The American Naturalist, published by The University of Chicago Press. Include the DOI when citing or quoting: https://doi.org/10.1086/722797. Copyright 2022 The University of Chicago.

in Titley et al. (2017), we found that the distribution of study species from sexual conflict papers (not normally distributed following Shapiro-Wilk test: W=0.59, p<0.0001) did not significantly differ from the diversity of described terrestrial species (Fig. 5; Wilcoxon rank-sum: W=52, p=0.599). Conversely, Titley et al. (2017) reported significantly different proportions of taxa were studied in biodiversity papers as compared to actual described species diversity (Fig. 5; Wilcoxon rank-sum: W=24, p<0.05). Subsequent analyses failed to show a significant link between standardized metrics of sexual conflict for taxonomic group (Fig. 5; N=8) and average range size (small or large; Kruskal-Wallis rank sum, X^2=3.746, p=0.154) or lifespan (i.e. short, medium, or long; X^2=3.239, p=0.0719). While we took a broad view of sexual conflict, none of the papers included in this dataset studied intralocus conflict. This may result from our reproductive behavior-focused search string.

Discussion

Reproductive research is biased towards temperate biomes

In comparing the frequency of reproductive biology studies within our results to that of animal species occurring within temperate and tropical regions, we found that temperate biomes are vastly over-studied when compared to tropical regions regarding reproductive research (Figs. 2-4). Furthermore, there were a larger number of lead authors from temperate localities represented within our results; the majority of these authors resided within the United States. These results indicate that there is a strong temperate bias within biological research of reproduction (Fig. 2, 4). It has been well established that a greater number of species exist within the tropics than outside of them (Zuk 2016; Mora et al. 2011; Corlet & Primack 2010). If studied according to the number of species, tropical articles should far outnumber temperate ones. However, our results corroborate what other studies have shown: a bias towards temperate regions exists in many biological research areas (Titley et al. 2017; Zuk 2016). The

This is the author's accepted manuscript without copyediting, formatting, or final corrections. It will be published in its final form in an upcoming issue of The American Naturalist, published by The University of Chicago Press. Include the DOI when citing or quoting: https://doi.org/10.1086/722797. Copyright 2022 The University of Chicago.

exact reasons for this trend are unclear, however, a few possible explanations, such as differences in GDP (gross domestic product) and a general belief that tropical regions are "different", meaning that findings from such studies are not-applicable to other systems, have been suggested (Titley et al. 2017; Machado et al. 2016; Zuk 2016)).

A general problem with studying these regions comes from the way we delimit these areas. Researchers often mistakenly assume "temperate" means anything non-tropical, and anything between the Tropics of Cancer and Capricorn is automatically tropical (MaChado et al. 2016). A wide variety of seasonality and climate patterns exists both within and outside the tropics (Machado et al. 2016)Additionally, the amount of precipitation interacts with temperature in determining the breeding season of harvesters, indicating that it is possible that the breeding season varies within a single region (Buzzato et al. 2013). Assuming that any region outside of the areas between the tropics is temperate fails to consider regional abiotic differences. These regional differences make it important to sample multiple populations, even when investigations are performed within a single biome, as variations in mating system and/or sexual conflict are possible (Machado et al. 2016).

Multiple interacting factors may determine the geography of sexual conflict

Climate patterns and/or seasonality may represent a small part of a larger, interactive network of factors which all have repercussions on the strength of sexual conflict. Given the available information we found that after accounting for the temperate bias, there was no statistically significant difference in sexual conflict metrics between temperate and tropical biomes. Based on our results, this indicates that sexual conflict may not be more prevalent in temperate regions. However, this may not be the correct interpretation. As our results indicate, the amount of reproductive research does not directly correlate with species prevalence. If this were the case, temperate regions would have a much higher level of species diversity than tropical ones, reflecting the research bias indicated by our results. Moreover, the distribution of sexual conflict

This is the author's accepted manuscript without copyediting, formatting, or final corrections. It will be published in its final form in an upcoming issue of The American Naturalist, published by The University of Chicago Press. Include the DOI when citing or quoting: https://doi.org/10.1086/722797. Copyright 2022 The University of Chicago.

taxa more closely mirrors terrestrial species distributions than studies of biodiversity (Fig. 5), supporting the conclusion that true species diversity, sexual conflict incidence, and the level of research are misaligned (Titley et al. 2017). This leaves the possibility that the amount of sexual conflict research in different areas does not reflect the natural occurrence of sexual conflict. Future studies, as we describe in D.3., will need to be completed in order to reveal the true role of breeding season in the evolution of conflict.

While we propose that sexual conflict may be stronger in temperate climates due to variable seasonality, other studies have proposed opposing explanations. Increased breeding season length was shown to correlate positively with sexual selection in pipefish (Monteiro & Lyons 2012). Additionally, male harm to females was shown to be temperature dependent in *Drosophila* (García-Roa et al. 2018); specifically, less harm was noted in temperatures higher and lower than the species optimum. This result highlights the importance of temperature in determining the level of conflict, but temperature mediated effects may vary across taxa (García-Roa et al. 2020). Other studies suggest that conflict should be weaker in stressful or otherwise less stable environments (Plesnar-Bielak & Lukasiewicz 2021; García-Roa et al. 2020; De Lisle et al. 2018), but the exact factors that make an environment stressful are likely to vary between species. De Lisle and others (2018) additionally found the strength of sexually antagonistic selection to have a negative relationship with latitude. Together these results suggest that conflict may actually be weaker in temperate regions than in tropical regions and that conflict may be more pronounced in more stable environments such as those found in tropical climates which lack seasonality (De Lisle et al. 2018; Dynessius & Jansson 2000).

Another possible explanation for a difference in conflict across climates is the spatial distribution of reproductive individuals (Plesnar-Bielak & Skwierzyńska 2020; Machado et al. 2016). As proposed by Machado et al. (2016), a decreased breeding season may align the reproductive interests of males and females. Populations within tropical areas are likely to include a mixture of reproductively available and unavailable females due to the extended

This is the author's accepted manuscript without copyediting, formatting, or final corrections. It will be published in its final form in an upcoming issue of The American Naturalist, published by The University of Chicago Press. Include the DOI when citing or quoting: https://doi.org/10.1086/722797. Copyright 2022 The University of Chicago.

breeding season (Machado et al. 2016). In contrast to this spatial distribution, populations within temperate areas may contain a higher number of receptive females due to the decreased time available to mate, producing alignment of male and female reproductive interests that would decrease conflict. While this does not explain the global geography of conflict, the spatial organization of receptive females may alter selection for coercive tactics, and in Opiliones it is an important factor to consider.

Breeding season may have an appreciable effect on the evolution of sexual conflict, but there are other variables which may moderate this effect. Traits such as lifespan and motility may mitigate the impact of a shortened breeding season. A shortened breeding season may be of increased importance for univoltine species, as they only have a singular reproductive event throughout their lifespan (Adler & Bonduriansky 2014). Conversely, multiple mating opportunities throughout an organism's lifespan, or a longer lifespan in general, may alter the level of sexual conflict within a population (Bonduriansky 2014; Adler & Bonduriansky 2014; Monteiro & Lyons 2012; Candolin 1998). An increased lifespan and number of mating opportunities may decrease the risk imposed if an organism fails to mate and as Kasumovic et al. (2008) point out, variations in selection across a breeding season are likely to be significant in species with a shorter lifespan. In addition to the possible effects of lifespan, the ability to freely disperse throughout an environment holds the possibility to mediate local environmental effects, and as a result, sexual conflict (Connallon 2015; Eldakar et al. 2010). In water striders, females disperse away from groups with a high number of coercive males, effectively balancing out selection for increased male coercion (Eldakar et al. 2010). The importance of local adaptation and dispersal is highlighted by the fact that sexual conflict is expected to vary across a species range, being strongest near the center where populations are more locally adapted (De Lisle 2018; Connallon & Hall 2016; Connallon 2015). Similarly, sexual conflict is expected to be strongest in populations in more heterogeneous, smaller, and/or more complex environments. (Plesnar-Bielak & Lukasiewicz 2021; De Lisle et al. 2018; García-Roa et al. 2018;

This is the author's accepted manuscript without copyediting, formatting, or final corrections. It will be published in its final form in an upcoming issue of The American Naturalist, published by The University of Chicago Press. Include the DOI when citing or quoting: https://doi.org/10.1086/722797. Copyright 2022 The University of Chicago.

Yun et al. 2018; Yun et al. 2017; Connallon 2015). In light of this evidence, it is possible that motility, lifespan, and the number of reproductive events may mediate the level of sexual conflict imposed by a shortened breeding season.

In sum, breeding season length, local adaptation, precipitation, temperature, species range size, voltinity, motility, environmental stress, are all likely contributors to conflict (García-Roa et al. 2020; De Lisle et al. 2018; García-Roa et al. 2018; Connallon & Hall 2016; Connallon 2015). Due to the interactive nature of the multiple abiotic factors, disentangling their effects could prove difficult when evaluating the initial conditions promoting conflict.

Future empirical investigations are needed and should account for interpopulation variation

This study investigates the connection between sexual conflict and biome by evaluating the level of published conflict research within each biome. We did not detect any significant difference in sexual conflict metrics, however, this review highlights a few important considerations for future research. As indicated by our review of reproductive studies, more attention needs to focus on tropical regions. Our small sample size of tropical conflict studies reflects the lack of scientific attention within these regions. In addition to increased focus on understudied regions, future investigations should sample multiple populations across the geographic range a species exists in. Local adaptation may prove to be an important consideration for sexual conflict investigations and sampling of single populations fails to account for any possible variation between populations. Studies investigating continuous populations spanning across regions with varied seasonality and climates would be ideal but may prove difficult. Importantly, future investigations which directly tests the connection between breeding season and conflict should be completed. What follows are multiple suggested methods for evaluating the specific drivers behind the evolution of conflict in Opiliones (or other systems).

This is the author's accepted manuscript without copyediting, formatting, or final corrections. It will be published in its final form in an upcoming issue of The American Naturalist, published by The University of Chicago Press. Include the DOI when citing or quoting: https://doi.org/10.1086/722797. Copyright 2022 The University of Chicago.

Phylogenetic comparative methods

While previous studies have investigated the mating systems of different harvester species within eastern North America, there are still more species for which phylogenetic and morphological comparative analyses have yet to be completed (Burns et al. 2013; Burns et al. 2012). North American leiobunine species were identified to be monophyletic, with female choice-based mating to be the ancestral system (Burns et al. 2013; Burns et al. 2012). Certain tropical Opiliones species within Central America remain unevaluated. Investigating the mating systems of these species, specifically the presence or absence of previously described coercive and cooperative suite of traits, in addition to phylogenetic comparative analyses, may further support the geography of sexual conflict in Opiliones. This will further reveal the role of breeding season length in the evolution of conflict by sampling a continuum of species distributed along a latitudinal transect. If breeding season is a significant factor, then tropical species should exhibit the previously identified “cooperative” suite of traits.

Behavioral population crosses

One method for testing the benefits of coercive traits and strategies under a shortened breeding season is to perform transplantation experiments. In this type of study, individuals of a species ranging across temperate and tropical regions would be transplanted to a region to which they are not locally adapted. Under this design, cooperative individuals from a region with low seasonality would be transplanted into a region with high seasonality, and coercive individuals from high seasonality regions would be transplanted to low seasonality regions. Focal populations would be contained in outdoor enclosures which allow exposure to all the abiotic conditions within a specific region while preventing individuals from dispersing. The fitness of these transplants (i.e., numbers of offspring, reproductive attempts, and successful reproductions) would be quantified for each region. These results would be compared to the average fitness within their home population. If coercive mating evolved as a response to a

This is the author's accepted manuscript without copyediting, formatting, or final corrections. It will be published in its final form in an upcoming issue of The American Naturalist, published by The University of Chicago Press. Include the DOI when citing or quoting: https://doi.org/10.1086/722797. Copyright 2022 The University of Chicago.

shortened breeding season, cooperative individuals (particularly males; Yun et al. 2018) transplanted from low seasonality regions into a high seasonality region should suffer reduced fitness. The expected explanation for this result is that they lack the coercive traits which are found in locally adapted populations. This leaves transplants suffering from a limited time to secure mating. Similarly, coercive populations transplanted from regions with a short breeding season into a region with a longer breeding season are expected to see no statistically significant change in their fecundity, though an increase may be possible. Coercive males may particularly see an increase in fitness due to the presence of coercive traits which ensure mating. The results of this experiment would support the hypothesis that coercive strategies are a local adaptation to a shortened breeding season.

Experimental evolution

A final method of evaluating breeding season length and its effects on sexual conflict is through experimentally-induced evolution trials. Previous studies have performed such trials involving sexual conflict in *Drosophila* (Hollis et al. 2019). Male *Drosophila melanogaster* have seminal fluid proteins (SFP) which affect female mating behavior and impose a fitness cost to females (Hollis et al. 2019). Changes in these SFP, and male-female mating effects, were noted to occur when monogamy was enforced over 150 generations (Hollis et al. 2019). We propose a test of the effects of the breeding season by inducing a “short” breeding season in experimental populations and examining the changes in SFP, female mating behavior, and overall female survival (post-mating). While other studies in *Drosophila* have indicated that temperature changes decrease conflict, none have evaluated “breeding season” (García-Roa et al. 2018). We suggest manipulating the length of time that males have access to females each generation. This would represent the constraint of a shortened breeding season within temperate regions but would isolate any abiotic factors such as temperature (García-Roa et al. 2018). Results of this experiment may provide support for the explanation that seasonality limits the time available

This is the author's accepted manuscript without copyediting, formatting, or final corrections. It will be published in its final form in an upcoming issue of The American Naturalist, published by The University of Chicago Press. Include the DOI when citing or quoting: https://doi.org/10.1086/722797. Copyright 2022 The University of Chicago.

to secure mates, which imposes a selective pressure upon males. This mechanism possibly drives the evolution of conflict in temperate species over tropical species.

Each of the previously mentioned methods alone, may be insufficient to conclude that seasonality is a significant driver in the evolution of conflict and coercive mating. Instead, each method represents one part of an overarching objective to better understand the environmental conditions which contribute to sexual conflict. While interest in sexual conflict and sexually antagonistic selection may have increased since 1966 (Fig. S1), many questions remain unanswered. These experiments aim to grant a clearer understanding of the evolution of sexual conflict.

Conclusions

The abiotic drivers in the evolution of sexual conflict are a network of interacting, and often opposing, factors. These factors are likely to drive local, population level, differences in mating system evolution and variation. Current research stands to benefit from increased attention to “tropical” regions as well as a purging of long held biases against tropical biology (Zuk 2016). However, discrete classification of biome into “temperate” and “tropical” is likely to be ineffective for future investigations (Machado et al. 2016). These broad classifications retain a prominent level of variation in climate patterns and abiotic environmental factors, possibly making investigations difficult (Machado et al. 2016). This is an area for improvement in current research which often utilizes or investigates single populations and fails to account for, possibly significant, population level variation (Fowler-Finn et al. 2019; Olivero et al. 2017; Machado et al. 2016). Interpopulation trait variation could mean that investigation of a singular population is not sufficient to draw conclusions about an entire species and should be considered when studying the abiotic drivers of mating system evolution. Finally, the length of the breeding season may have an appreciable effect on mating system evolution (Heldstab 2021; Machado et al. 2016; Burns et al. 2012), but future investigations will need to decouple the breeding

This is the author's accepted manuscript without copyediting, formatting, or final corrections. It will be published in its final form in an upcoming issue of The American Naturalist, published by The University of Chicago Press. Include the DOI when citing or quoting: https://doi.org/10.1086/722797. Copyright 2022 The University of Chicago.

season from other abiotic factors in order to draw accurate conclusions (García-Roa et al. 2020; De Lisle et al. 2018; García-Roa et al. 2018; Connallon & Hall 2016; Connallon 2015).

Acknowledgments

DW and MKJ were supported by NSF 1002566 to the UMBC LSAMP program. We are thankful for the expertise of UMBC Librarian Semhar Yohannes, who was instrumental in acquiring resources and reviewing our initial search string. We additionally thank lab mates Tyler Brown and Marina Fahim, editor Dr. Suzanne Alonzo, and two anonymous reviewers for their critical feedback.

Statement of Authorship

RB: Methods development/experimental design; Data collection; Data analysis; Data validation; Writing – Original draft, review, and editing

DW: Data collection; Data validation; Writing – Original draft

MKJ: Data collection; Data validation; Writing – Original draft

MB: Conceptualization; Methods development/experimental design; Data collection; Data analysis; Data validation; Writing – Original draft, review, and editing

Data and Code Accessibility

Scripts and data files are available on the Dryad Digital Repository at: doi:10.5061/dryad.79cnp5hx4 (Bacon et al. 2022).

This is the author's accepted manuscript without copyediting, formatting, or final corrections. It will be published in its final form in an upcoming issue of The American Naturalist, published by The University of Chicago Press. Include the DOI when citing or quoting: https://doi.org/10.1086/722797. Copyright 2022 The University of Chicago.

Literature Cited

Adler, M. and R. Bonduriansky. 2014. Sexual Conflict, Life Span, and Aging. Cold Spring Harbor Perspectives in Biology 6(8). doi:10.1101/cshperspect.a017566

Arnqvist, G., and L. Rowe. 2005. Sexual Conflict. Princeton University Press, Princeton.

Bacon, R., D. Washington, M.K. Johnson, and M. Burns. 2022. Data from: The geography of sexual conflict: a synthetic review. American Naturalist, Dryad Digital Repository, doi:10.5061/dryad.79cnp5hx4.

Block, W., G. Baust, F. Franks, I.A. Johnston, and J. Bale. 1990. Cold Tolerance of Insects and Other Arthropods [and Discussion]. JSTOR. 326(1237): 613-633. https://doi.org/10.1098/rstb.1990.0035

Bonduriansky, R. 2014. The ecology of sexual conflict: background mortality can modulate the effects of male manipulation on female fitness. Evolution 68: 595-604.

Burns, M., M. Hedin, and J.W. Shultz. 2012. Molecular phylogeny of the leiobunine harvestmen of eastern North America (Opiliones: Sclerosomatidae: Leiobuninae). Molecular Phylogenetics and Evolution 63(2): 291-298. https://doi.org/10.1016/j.ympev.2011.12.025

Burns, M., M. Hedin, and J.W. Shultz. 2013. Comparative analyses of reproductive structures in harvestmen (Opiliones) reveal multiple transitions from courtship to precopulatory antagonism. PLoS ONE 8(6): e66767. doi:10.1371/journal.pone.0066767.

Burns, M., and J.W. Shultz. 2015. Biomechanical diversity of mating structures among harvestmen species is consistent with a spectrum of precopulatory strategies. PLoS ONE 10(9): e0137181. doi:10.1371/journal.pone.0137181.

Buzzato, B., R. Macías-Ordóñez, and G. Machado. 2013. Macroecology of Harvestman Mating Systems. *In* R. Macedo, ed. Sexual Selection: Perspectives and Models from the Neotropics. (1st Ed.). Academic Press, London. doi:10.1016/B978-0-12-416028-6.00005-0

This is the author's accepted manuscript without copyediting, formatting, or final corrections. It will be published in its final form in an upcoming issue of The American Naturalist, published by The University of Chicago Press. Include the DOI when citing or quoting: https://doi.org/10.1086/722797. Copyright 2022 The University of Chicago.

Buzatto, B.A., and G. Machado. 2008. Resource defense polygyny shifts to female defense polygyny over the course of the reproductive season of a neotropical harvestman. Behavioral Ecology and Sociobiology 63: 85-94. https://doi.org/10.1007/s00265-008-0638-9

Candolin, U. 1998. Reproduction under predation risk and the trade-off between current and future reproduction in the threespine stickleback. Proceedings of the Royal Society B 265(1402): 1171-1175. doi:10.1098/rspb.1998.0415

Chapman, T., G. Arnqvist, J. Bangham, and L. Rowe. 2003. Sexual Conflict. Trends in Ecology and Evolution 18(1): 41-47. doi:10.1016/S0169-5347(02)00004-6

Chown, S., and S. Nicholson. 2004. Insect Physiological Ecology: Mechanisms and Patterns. (1st ed). Oxford Scholarship Online. doi:10.1093/acprof:oso/9780198515494.001.0001

Clutton-Brock, T.H., and G.A. Parker. 1995. Sexual Coercion in Animal Societies. Animal Behaviour 49(5): 1345-1365. doi:10.1006/anbe.1995.0166

Connallon, T. 2015. The geography of sex-specific selection, local adaptation, and sexual dimorphism. Evolution 69(9): 2333-2344. doi:10.1111/evo.12737

Connallon, T., and M.D. Hall. 2016. Genetic correlations and sex-specific adaptation in changing environments. Evolution 70(10): 2186-2198. doi:10.1111/evo.13025

Corlett, R., and R.B. Primack. 2010. Tropical Rain Forests: An Ecological and Biogeographical Comparison. (2nd Ed.). Wiley, Malden, MA. doi: 10.1002/9781444392296

Côté, I.M., and M.D. Jennions. 2013. 2. The Procedure of Meta-analysis in a Nutshell. *In* The Handbook for Meta-Analysis in Ecology and Evolution (Eds. J. Koricheva, J. Gurevitch, K. Mengerson). Princeton University Press, Princeton, NJ. 14-24. https://doi.org/10.1515/9781400846184-004

De Lisle, S., D. Goedert, A. Reedy, and E. Svensson. 2018. Climatic Factors and Species Range Position Predict Sexually Antagonistic Selection Across Taxa. Philosophical Transactions of the Royal Society B 373(1757). doi:10.1098/rstb.2017.0415

This is the author's accepted manuscript without copyediting, formatting, or final corrections. It will be published in its final form in an upcoming issue of The American Naturalist, published by The University of Chicago Press. Include the DOI when citing or quoting: https://doi.org/10.1086/722797. Copyright 2022 The University of Chicago.

Dynessius, M., and R. Jansson. 2000. Evolutionary consequences of changes in species' geographical distributions driven by Milankovitch climate oscillations. Proceedings of the National Academy of Sciences of the United States of America 97(16): 9115-9120. doi:10.1073/pnas.97.16.9115

Eldakar, O.M., D.S. Wilson, M.J. Dlugos, and J.W. Pepper. 2010. The role of multilevel selection in the evolution of sexual conflict in the water strider *Aquarius remigis*. Evolution 64(11): 3183-3189. doi:10.1111/j.1558-5646.2010.01087.x

Emlen, S.T., and L.W. Oring. 1977. Ecology, Sexual Selection, and the Evolution of Mating Systems. Science 197(4300): 215-223. doi: 10.1126/science.327542

Fowler-Finn, K., S.L. Boyer, R. Ikagawa, T. Jeffries, P.C. Kahn, E.M. Larsen, D. Lee, D. Sassen, and M. Smeester. 2019. Qualitative and quantitative comparisons of mating behaviour across multiple populations and six species of leiobunine harvestmen (Arachnida: Opiliones). Behaviour 156(3-4): 363-390. doi: 10.1163/1568539X-00003545.

Freeman, S., K. Quillin, L.A. Allison, M. Black, E. Taylor, G. Podgorski, and J. Carmichael. 2017. Biological science (6th Ed.). Pearson.

García-Roa, R., V. Chirinos, and P. Carazo. 2018. The ecology of sexual conflict: behaviorally plastic responses to temperature variation in the social environment can drastically modulate male harm to females. bioRxiv. doi:10.1111/1365-2435.13275

García-Roa, R., F. Garcia-Gonzales, D.W.A. Noble, and P. Carazo. 2020. Temperature as a Modulator of Sexual Selection. Cambridge Philosophical Society 95: 1607-1629. doi:10.1111/brv.12632

Heldstab, S.A. 2021. Latitude, life history and sexual size dimorphism correlate with reproductive seasonality in rodents. Mam Rev. 51: 256-271. https://doi.org/10.1111/mam.12231

Hollis, B., M. Koppik, K. Wensing, H. Ruhman, and E. Genzoni. 2019. Sexual conflict drives male manipulation of female postmating responses in *Drosophila melanogaster*.

This is the author's accepted manuscript without copyediting, formatting, or final corrections. It will be published in its final form in an upcoming issue of The American Naturalist, published by The University of Chicago Press. Include the DOI when citing or quoting: https://doi.org/10.1086/722797. Copyright 2022 The University of Chicago.

Proceedings of the National Academy of Sciences of the USA 117(17): 8437-8444. doi:10.1073/pnas.1821386116

Kaneshiro, K. 2009. Sexual Selection. *In* V. Resh. Encyclopedia of Insects (2nd Ed.). Academic Press, London. pp. 917-921. doi:10.1016/B978-0-12-374144-8.00243-5

Kasumovic, M.M., M.J. Bruce, M.C.B. Andrade, and M.E. Herberstein. 2008. Spatial and temporal demographic variation drives within-season fluctuations in sexual selection. Evolution 62: 2316-2325. https://doi.org/10.1111/j.1558-5646.2008.00446.x

Machado, G., B. Buzatto, S. García-Hernández, and R. Macías-Ordóñez. 2016. Macroecology of Sexual Selection: A Predictive Conceptual Framework for Large-Scale Variation in Reproductive Traits. The American Naturalist 188: S8-S27. doi: 10.1086/687575

Monteiro, N.M., and D.O. Lyons. 2012. Stronger Sexual Selection in Warmer Waters: The Case of a Sex Role Reversed Pipefish. PLoS ONE 7(8): e44251. doi:10.1371/journal.pone.0044251

Mora, C., D.P. Tittensor, S. Adl, A.G.B. Simpson, and B. Worm. 2011. How Many Species Are There on Earth and in the Ocean? PLoS BIOLOGY. 9(8): e1001127. https://doi.org/10.1371/journal.pbio.1001127

Olito, C., J.K. Abbott, and C.Y. Jordan. 2018. The interaction between sex-specific selection and local adaptation in species without separate sexes. Philosophical Transactions of the Royal Society B. doi:10.1098/rstb.2017.0426

Olivero, P., C. Mattoni, and A. Peretti. 2017. Differences in mating behavior between two allopatric populations of a Neotropical scorpion. Zoology 123: 71-78. https://doi.org/10.1016/j.zool.2017.06.009

Parker, G.A. 1979. Sexual selection and sexual conflict. *In* Blum, M.S and Blum, Eds. Sexual selection and reproductive competition in insects. Academic Press, London. pp. 123-166. https://doi.org/10.1016/B978-0-12-108750-0.X5001-0

This is the author's accepted manuscript without copyediting, formatting, or final corrections. It will be published in its final form in an upcoming issue of The American Naturalist, published by The University of Chicago Press. Include the DOI when citing or quoting: https://doi.org/10.1086/722797. Copyright 2022 The University of Chicago.

Parker, G.A. 2006. Sexual conflict over mating and fertilization: an overview. Philosophical Transactions of the Royal Society B 361(1466): 235–259. doi:10.1098/rstb.2005.1785

Perry, J., and L. Rowe. 2018. Sexual Conflict in its Ecological Setting. Philosophical Transactions of the Royal Society B 373(1757). doi:10.1098/rstb.2017.0418

Pizzari, T., and R. Snook. 2003. Perspective: Sexual conflict and sexual selection: chasing away paradigm shifts. International Journal of Organic Evolution 57(6): 1223-1236. doi:10.1111/j.0014-3820.2003.tb00331.x

Pizzari, T., and R. Snook. 2007. Sexual conflict and sexual selection: Measuring antagonistic coevolution. Evolution 58(6): 1389-1393. doi:10.1111/j.0014-3820.2004.tb01717.x

Plesnar-Bielak, A., and A. Łukasiewicz, A. 2021. Sexual conflict in a changing environment. Cambridge Philosophical Society 96(5): 1854-1867. https://doi.org/10.1111/brv.12728

Plesnar-Bielak, A., A.M. Skwierzyńska, and J. Radwan. 2020. Sexual and ecological selection on a sexual conflict gene. Journal of Evolutionary Biology 33: 1433–1439. https://doi.org/10.1111/jeb.13680

Rice, W.R. 2000. Dangerous Liaisons. Proceedings of the National Academy of Sciences of the USA 97: 12953-12955. doi:10.1073/pnas.97.24.12953

Schärer, L., L. Rowe, and G.A. Arnqvist. 2012. Anisogamy, chance and the evolution of sex roles. Trends in Ecology and Evolution 27(5): 260-264. doi:10.1016/j.tree.2011.12.006

Schenkel, M.A., I. Pen, L.W. Beukeboom, and J.C. Billeter. 2018. Making sense of intralocus and interlocus sexual conflict. Ecology and Evolution 8(24): 13035-13050. doi: .org/10.1002/ece3.4629

Titley, M.A., J.L. Snaddon, and E.C. Turner. 2017. Scientific research on animal biodiversity is systematically biased towards vertebrates and temperate regions. PLoS ONE 12(12): e0189577. doi: 10.1371/journal.pone.0189577

This is the author's accepted manuscript without copyediting, formatting, or final corrections. It will be published in its final form in an upcoming issue of The American Naturalist, published by The University of Chicago Press. Include the DOI when citing or quoting: https://doi.org/10.1086/722797. Copyright 2022 The University of Chicago.

Wensing, K.U., M. Koppik, and C. Fricke. 2017. Precopulatory but not postcopulatory male reproductive traits diverge in response to mating system evolution in *Drosophila melanogaster.* Ecology and Evolution 7(23): 10361-10378. doi: 10.1002/ece3.3542

Williams, G. C., and A Burt. 1966. Adaptation and natural selection (1st Ed.). Princeton University Press, Princeton. doi: 10.1111/j.1420-9101.2010.02162.x

Yun, L., P.J. Chen, K.E. Kwok, C.S. Angell, H.D. Rundle, and A.F. Agrawal. 2018. Competition for mates and the improvement of nonsexual fitness. Proceedings of the National Academy of Sciences 115(26): 6262-6767. doi: 10.1073/pnas.1805435115

Yun, L., P. Chen, A. Singh, A. Agrawal, and H. Rundle. 2017. The physical environment mediates male harm and its effect on selection in females. Proceedings of the Royal Society Publishing B 284(1858). doi: 10.1098/rspb.2017.0424

Zerbe, P., M. Clauss, D. Codron, L.B. Lackey, E. Rensch, J.W. Streich, J.M. Hatt, and D.W.H. Muller. 2012. Reproductive seasonality in captive wild ruminants: implications for biogeographical adaptation, photoperiodic control, and life history. Cambridge Philosophical Society 87: 965-990. doi: 10.1111/j1459-185x.2012.00238.x

Zuk, M. 2016. Temperate Assumptions: How Where We Work Influences How We Think. The American Naturalist 188: S1-S7. doi: 10.1086/687546

This is the author's accepted manuscript without copyediting, formatting, or final corrections. It will be published in its final form in an upcoming issue of The American Naturalist, published by The University of Chicago Press. Include the DOI when citing or quoting: https://doi.org/10.1086/722797. Copyright 2022 The University of Chicago.

Figure Legends

Figure 1. PRISMA diagram displaying the reasons for paper rejection along with percentages based on a 100 paper sample set. In total, 5,676 papers were excluded from our study resulting in a final sample size of 1,964 papers.

Figure 2. Plot visualizing publication bias towards temperate research in reproductive biology. Bar 1 indicates the distribution of described terrestrial animals from Mora et al. (2011), bar 2 indicates the distribution of studies of biodiversity (Titley et al. 2017), and bar 3 shows our results for temperate and tropical studies of reproductive biology. Here “a” indicates $p<0.05$, while “b” indicates no statistically significant difference in frequency.

Figure 3. Global distributions of (a) all retained reproductive biology papers and (b) all systems referencing sexual conflict.

Figure 4. Bar plots of sexual conflict-containing study systems before (a) and after (b) weighting the proportions of species due to temperate publication bias.

Figure 5. Bar plot of (1) described terrestrial species proportions, (2) species proportions from 2011-2015 biodiversity publications (Titley et al. 2017), (3) species proportions from sexual conflict systems in this study, and (4) standardized sexual conflict metric averages by taxonomic group. Using a Wilcoxon rank-sum test for data from (1)-(3), we find only bars 1 and 2 are significantly different (“b” indicates $p<0.05$, while “a” indicates no statistically significant difference).

Figure 1 (print only)

This is the author's accepted manuscript without copyediting, formatting, or final corrections. It will be published in its final form in an upcoming issue of The American Naturalist, published by The University of Chicago Press. Include the DOI when citing or quoting: https://doi.org/10.1086/722797. Copyright 2022 The University of Chicago.

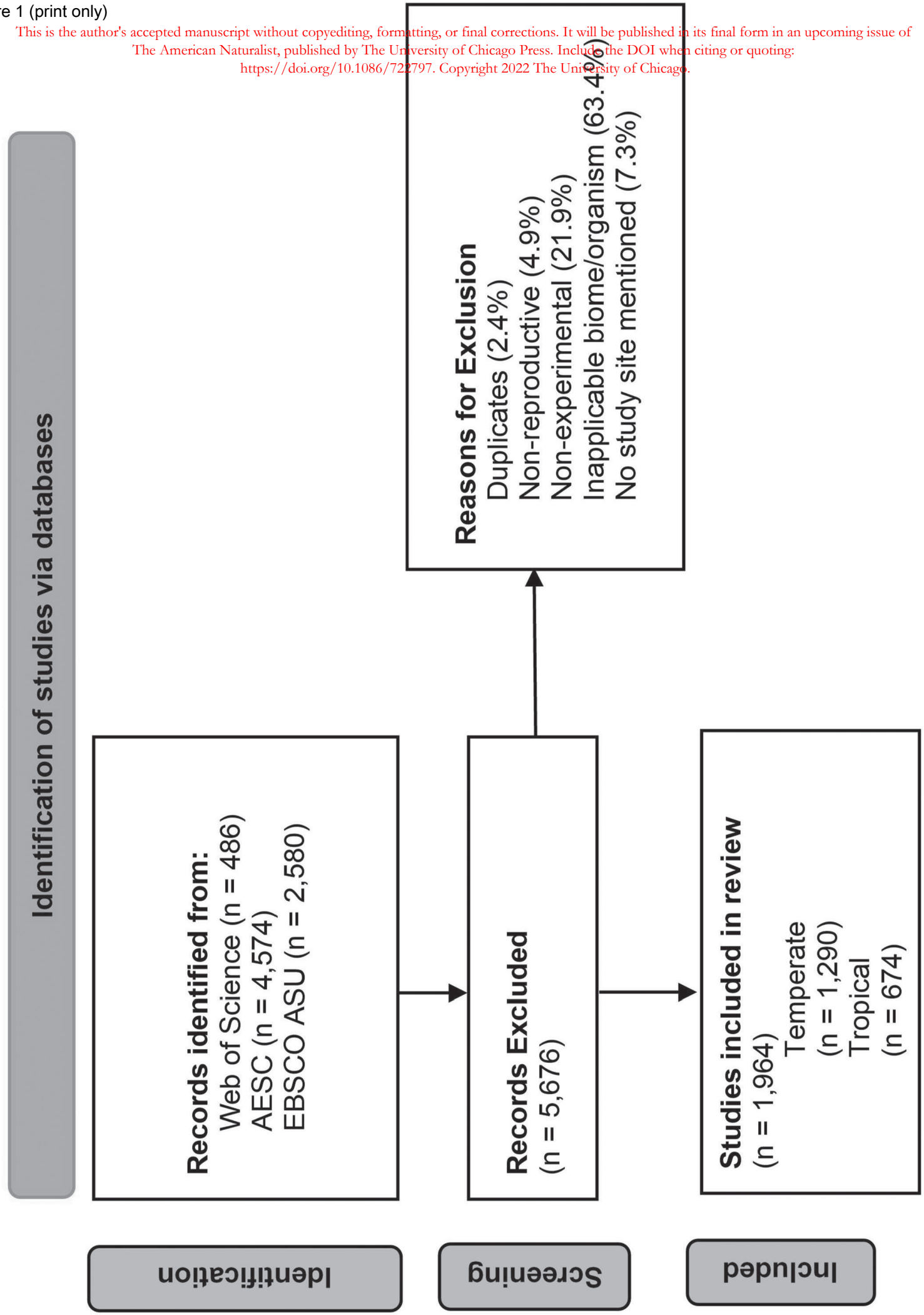


Figure 1

This is the author's accepted manuscript without copyediting, formatting, or final corrections. It will be published in its final form in an upcoming issue of The American Naturalist, published by The University of Chicago Press. Include the DOI when citing or quoting: https://doi.org/10.1086/722797. Copyright 2022 The University of Chicago.

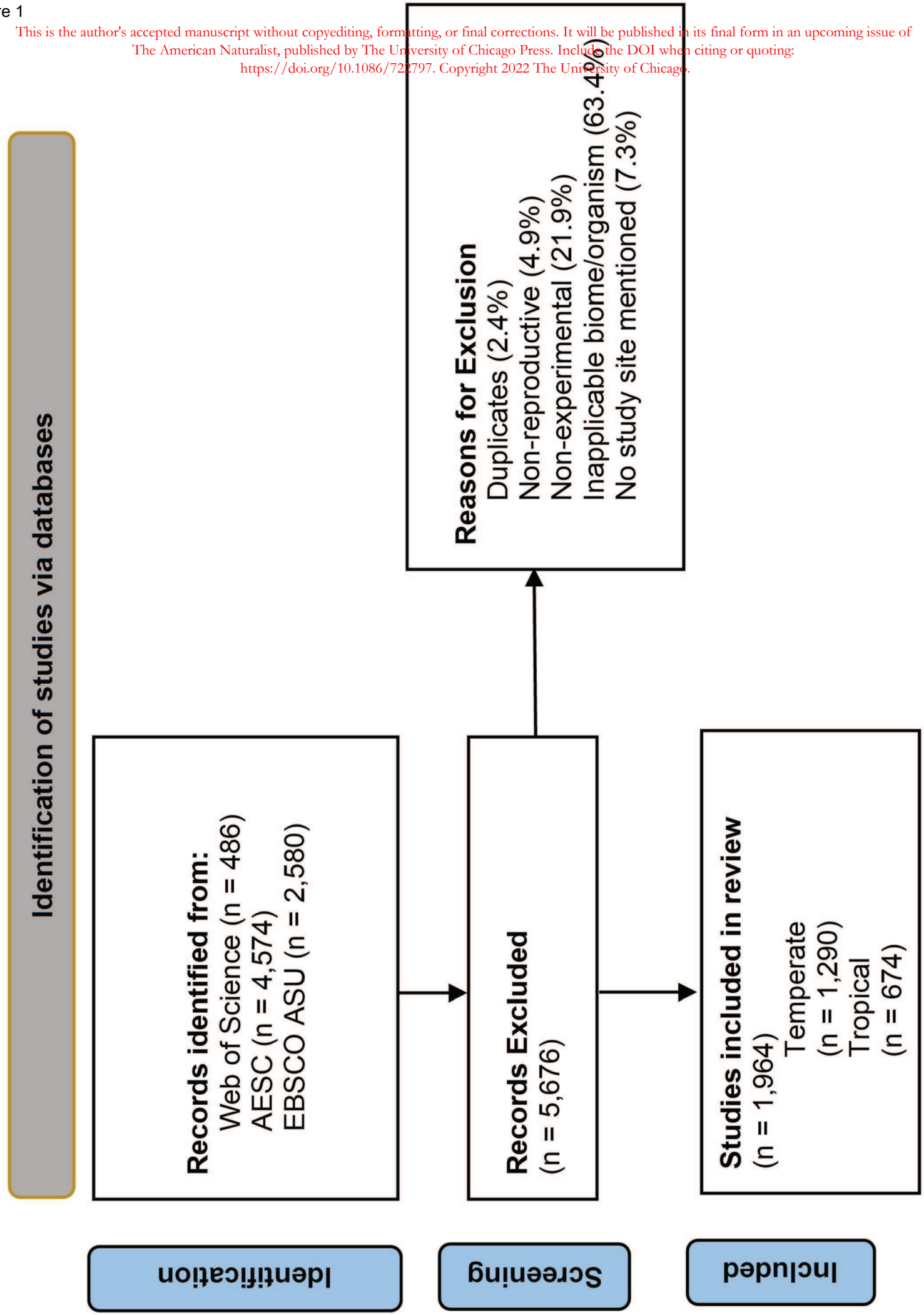


Figure 2 (print only)

This is the author's accepted manuscript without copyediting, formatting, or final corrections. It will be published in its final form in an upcoming issue of The American Naturalist, published by The University of Chicago Press. Include the DOI when citing or quoting: https://doi.org/10.1086/722797. Copyright 2022 The University of Chicago.

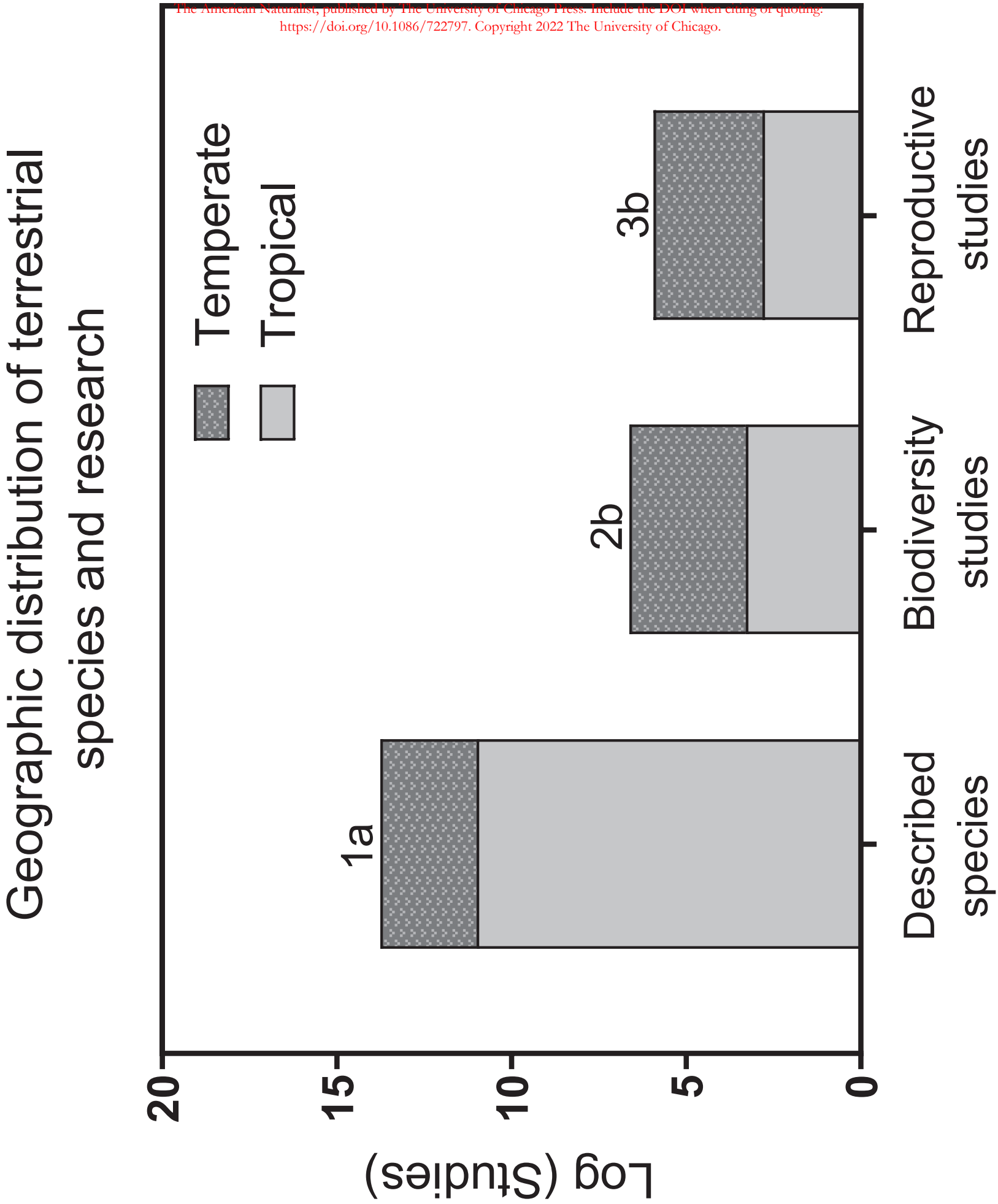


Figure 2

This is the author's accepted manuscript without copyediting, formatting, or final corrections. It will be published in its final form in an upcoming issue of The American Naturalist, published by The University of Chicago Press. Include the DOI when citing or quoting: https://doi.org/10.1086/722797. Copyright 2022 The University of Chicago.

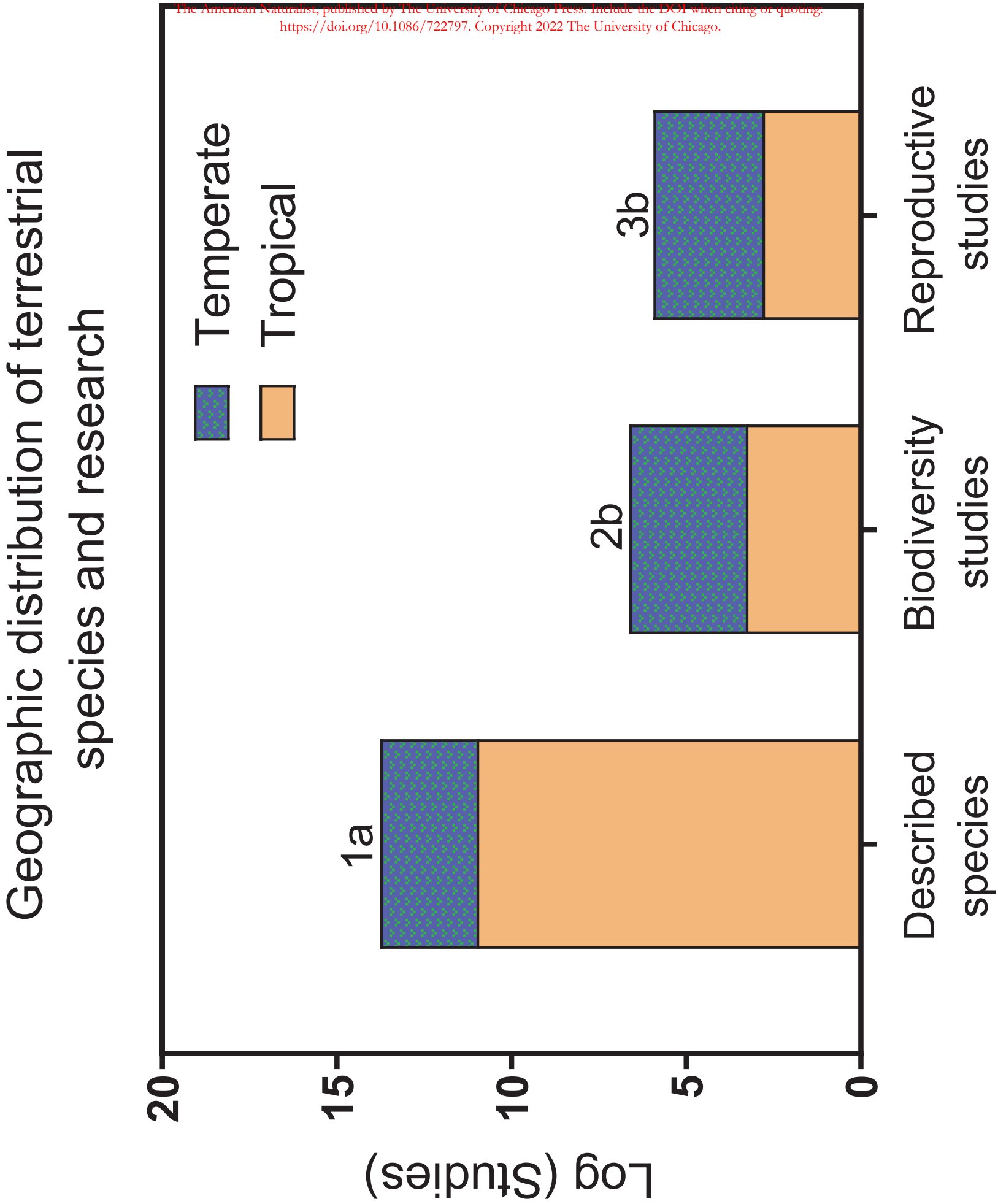
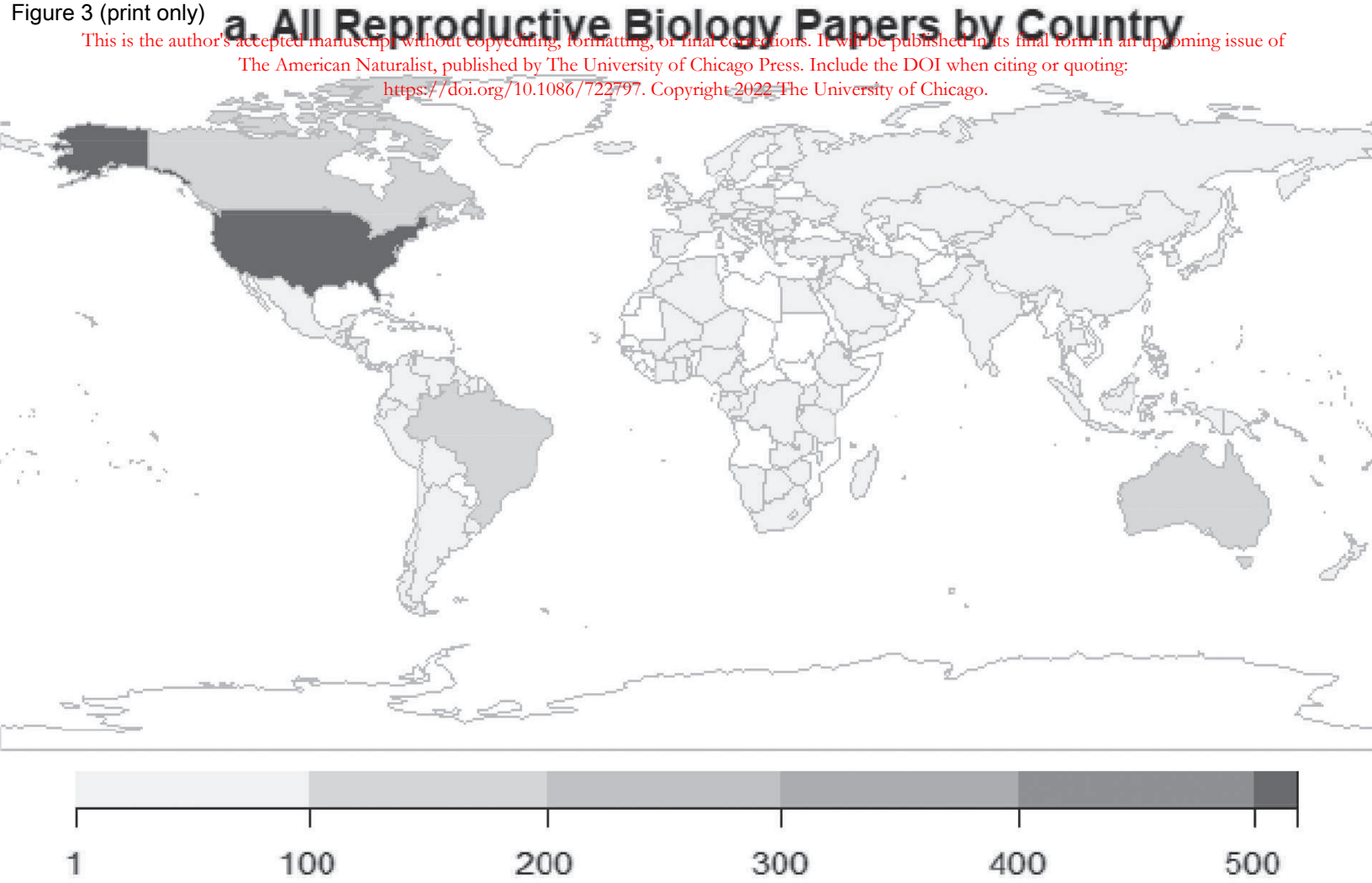


Figure 3 (print only)

This is the author's accepted manuscript without copyediting, formatting, or final corrections. It will be published in its final form in an upcoming issue of The American Naturalist, published by The University of Chicago Press. Include the DOI when citing or quoting: https://doi.org/10.1086/722797. Copyright 2022 The University of Chicago.



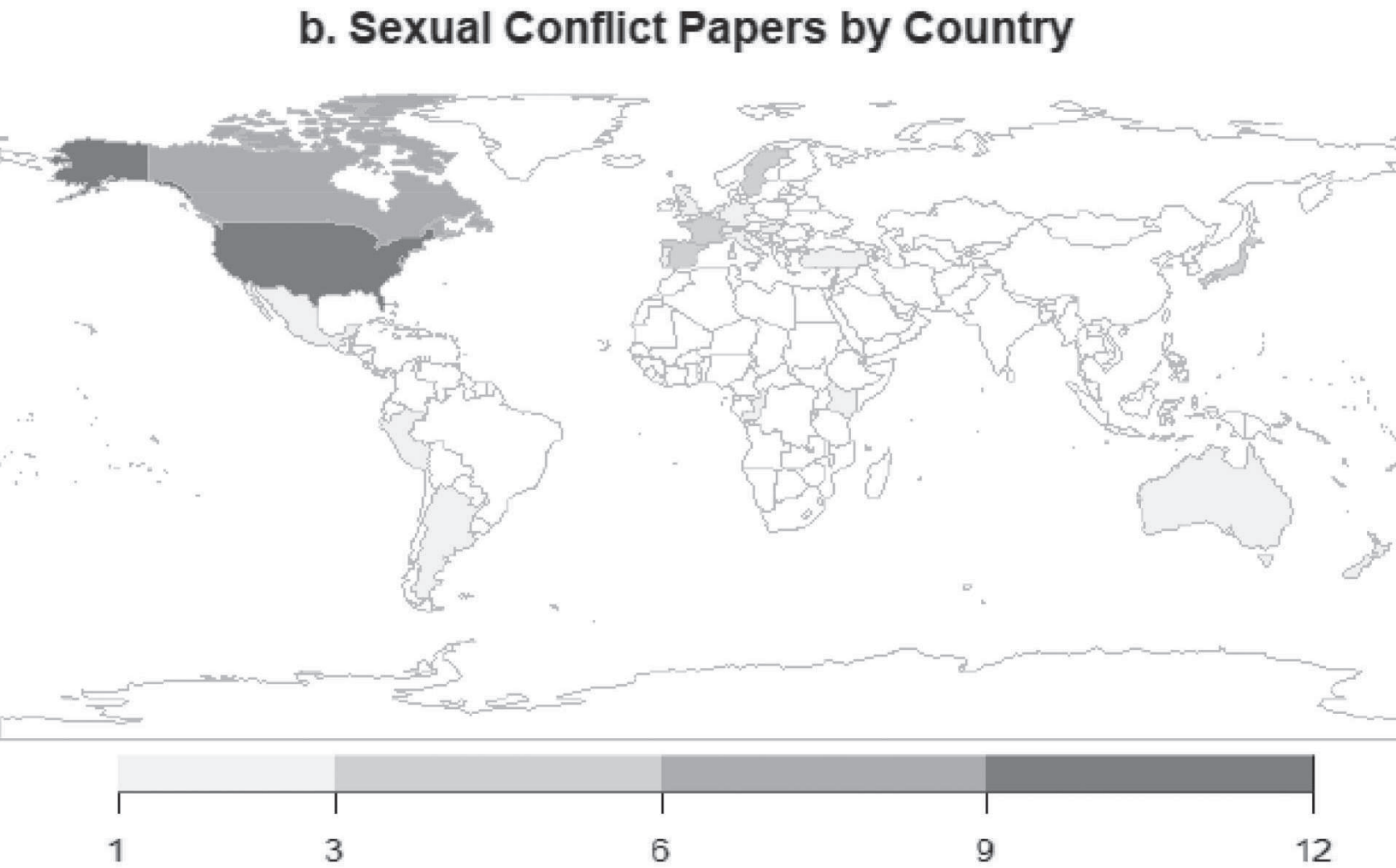
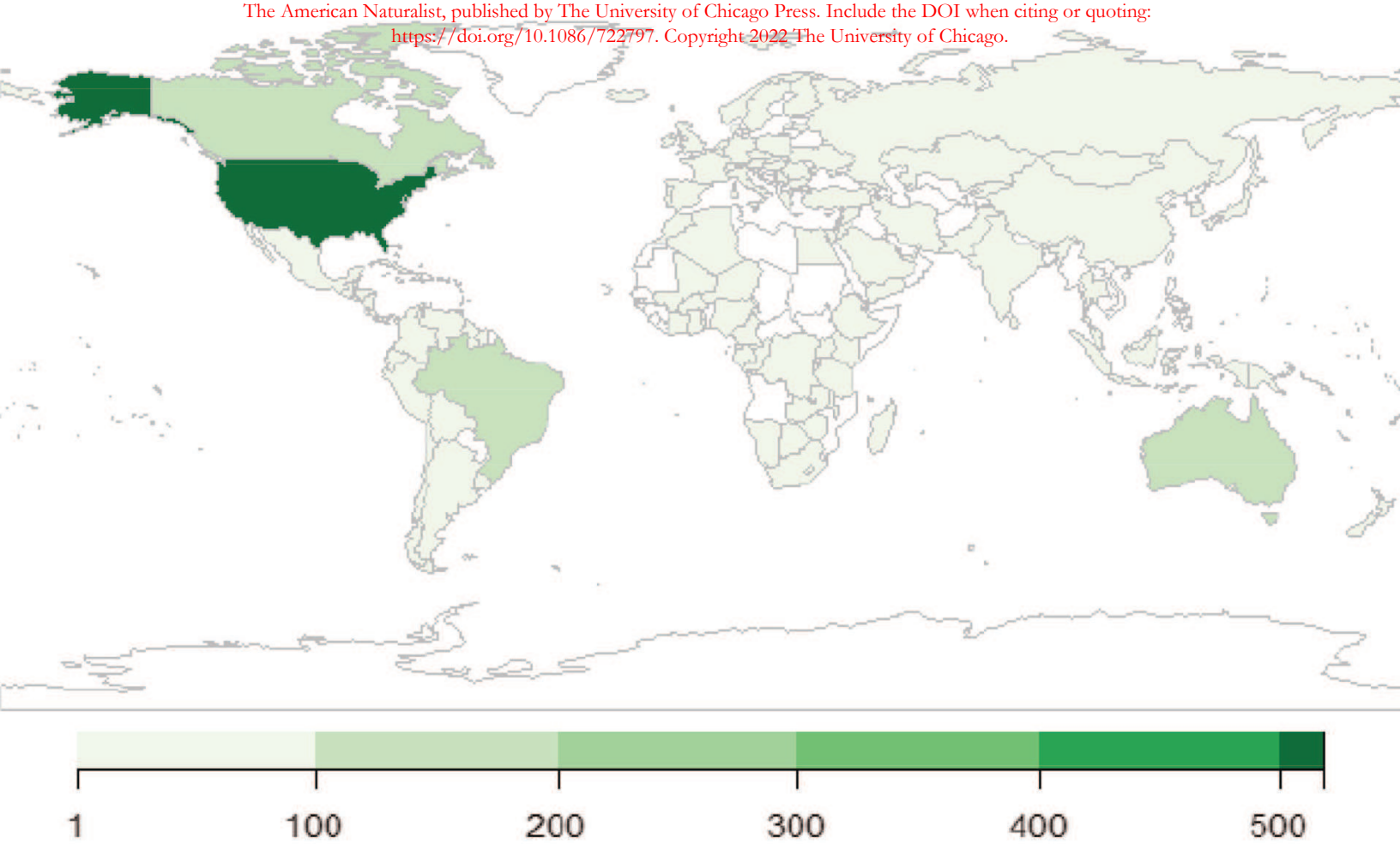


Figure 3

This is the author's accepted manuscript without copyediting, formatting, or final corrections. It will be published in its final form in an upcoming issue of The American Naturalist, published by The University of Chicago Press. Include the DOI when citing or quoting: https://doi.org/10.1086/722797. Copyright 2022 The University of Chicago.

a. All Reproductive Biology Papers by Country



b. Sexual Conflict Papers by Country

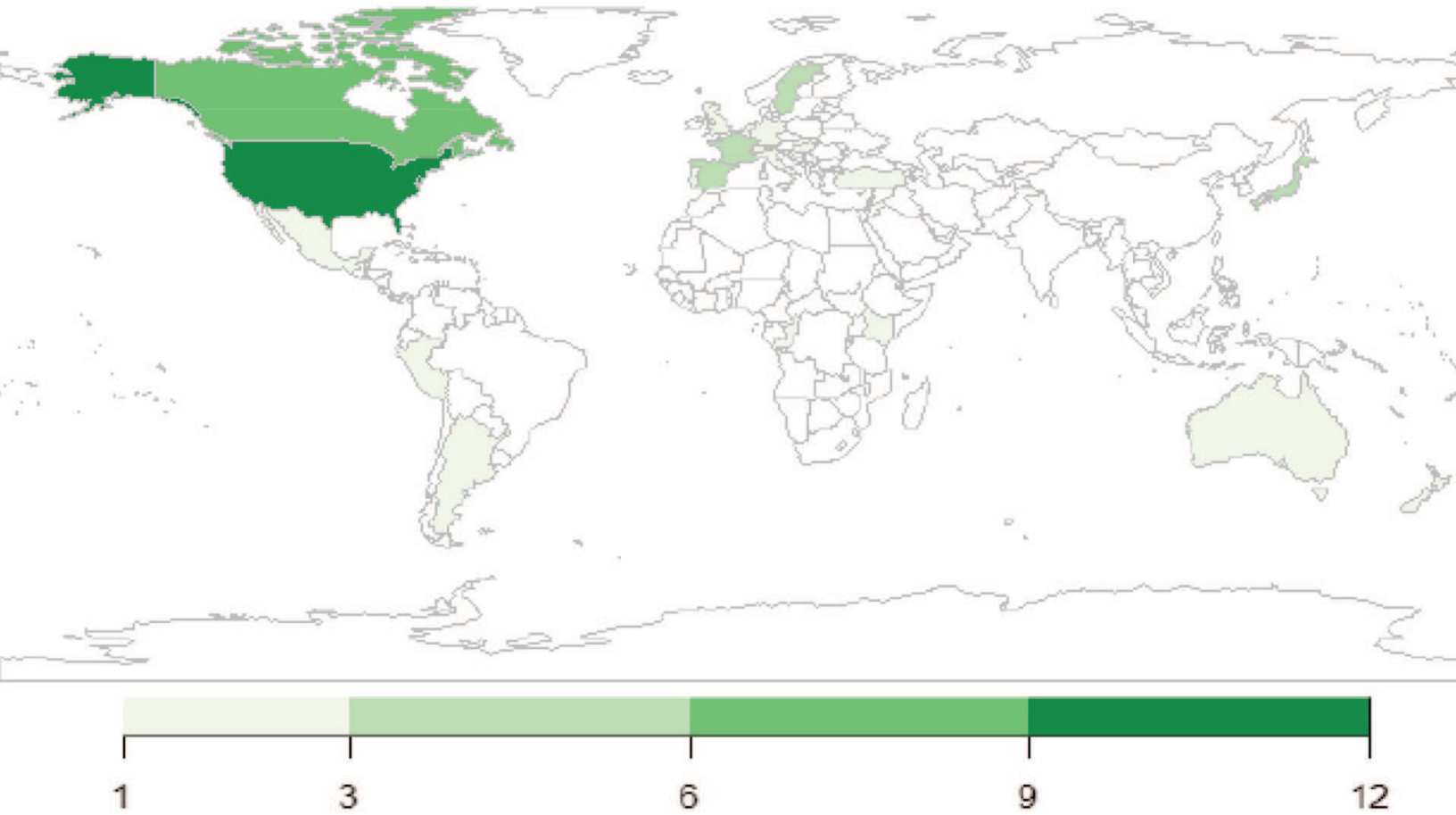


Figure 4 (print only)

This is the author's accepted manuscript without copyediting, formatting, or final corrections. It will be published in its final form in an upcoming issue of The American Naturalist, published by The University of Chicago Press. Include the DOI when citing or quoting: https://doi.org/10.1086/722797. Copyright 2022 The University of Chicago.

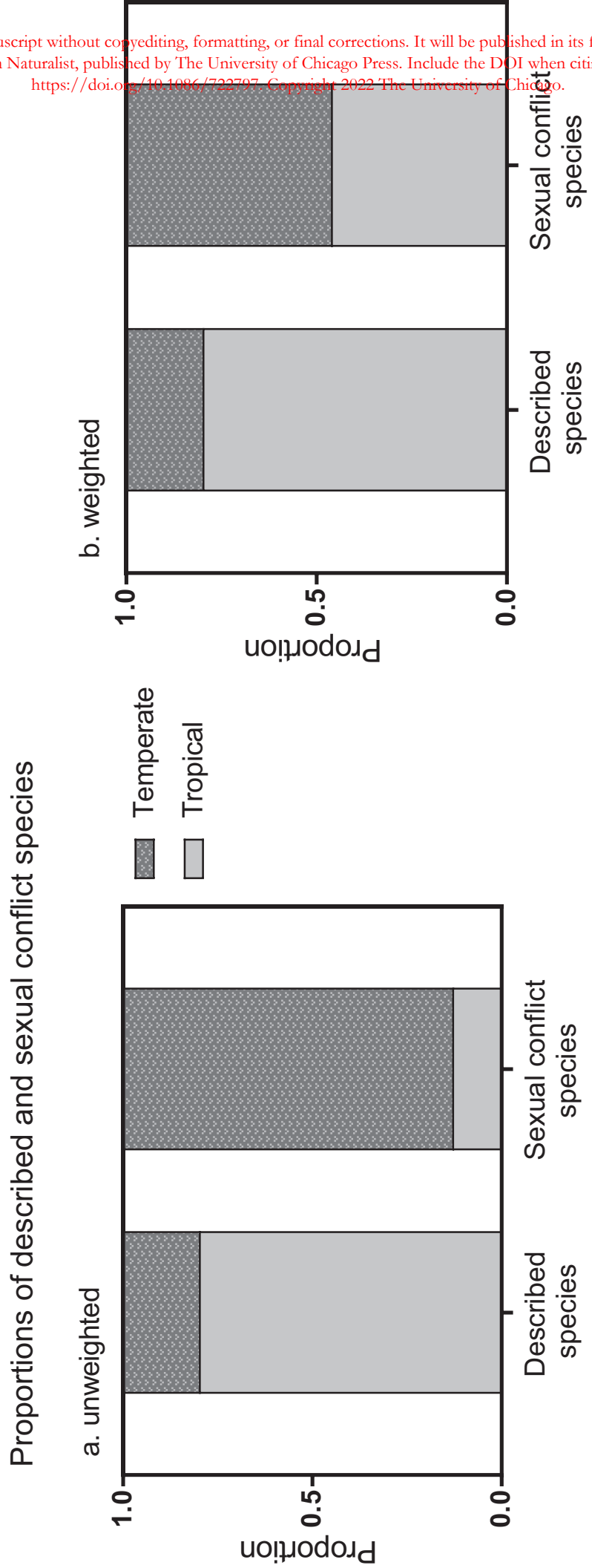


Figure 4

This is the author's accepted manuscript without copyediting, formatting, or final corrections. It will be published in its final form in an upcoming issue of The American Naturalist, published by The University of Chicago Press. Include the DOI when citing or quoting: https://doi.org/10.1086/722797. Copyright 2022 The University of Chicago.

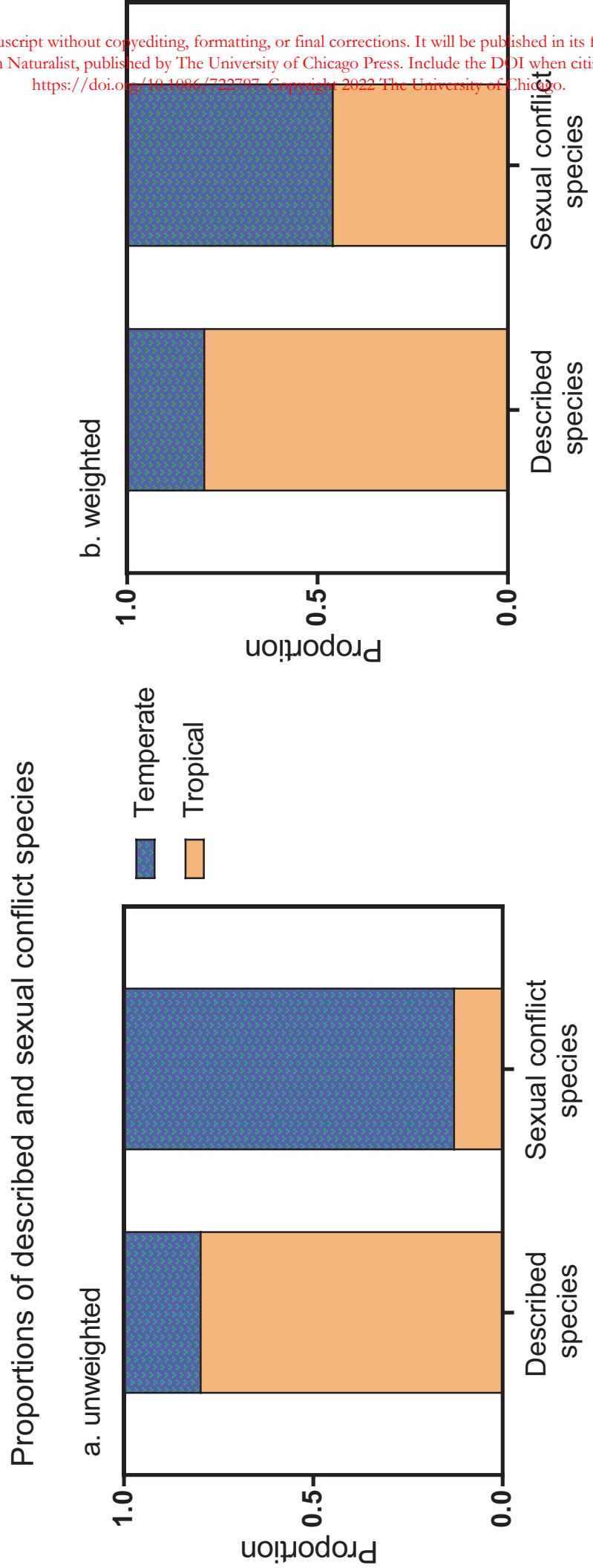
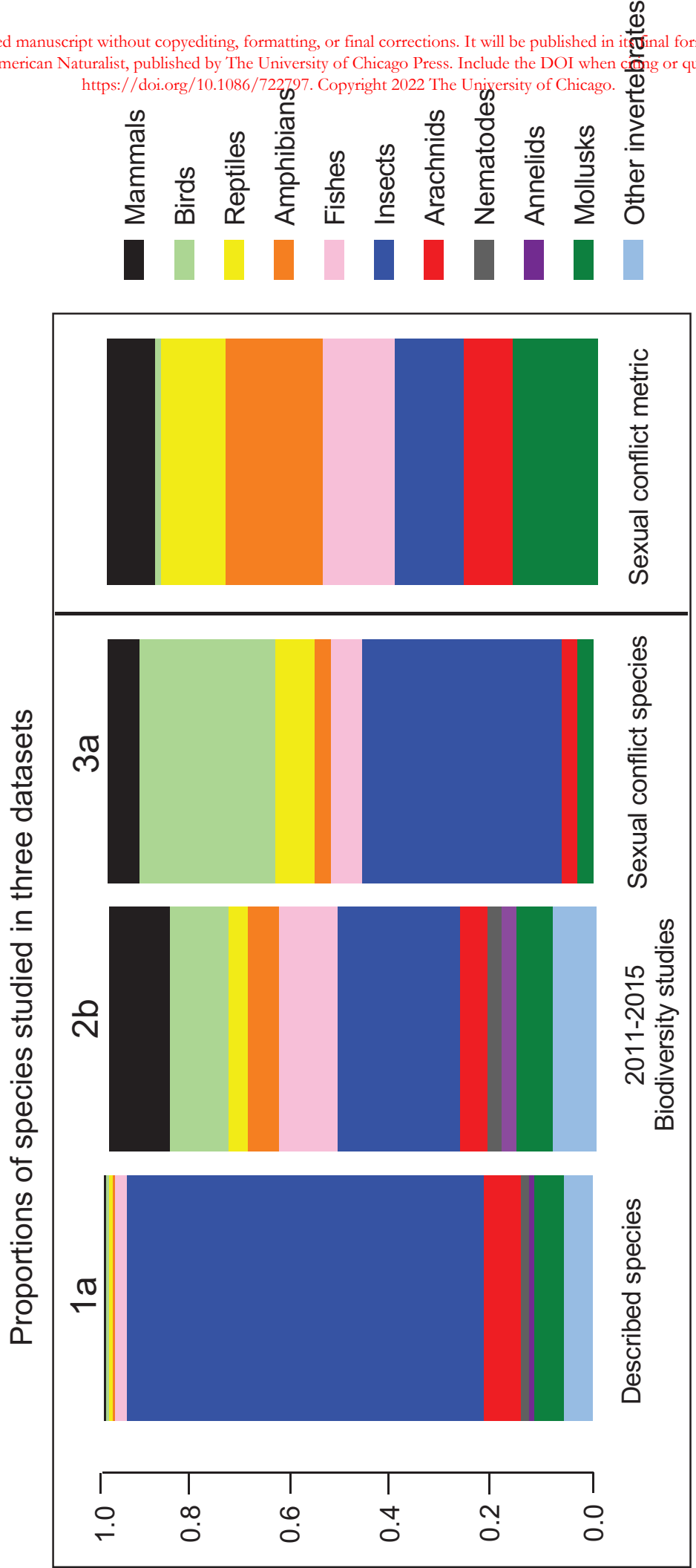


Figure 5

This is the author's accepted manuscript without copyediting, formatting, or final corrections. It will be published in its final form in an upcoming issue of The American Naturalist, published by The University of Chicago Press. Include the DOI when citing or quoting: https://doi.org/10.1086/722797. Copyright 2022 The University of Chicago.



Supplementary Files (PDF, Word, TeX, figures)
This is the author's accepted manuscript without copyediting, formatting, or final corrections. It will be published in its final form in an upcoming issue of The American Naturalist, published by The University of Chicago Press. Include the DOI when citing or quoting: https://doi.org/10.1086/722750 Copyright 2022 by The University of Chicago.

Supplementary material: The geography of sexual conflict: a synthetic review

Ryan Bacon[1], Dante Washington[1,2], Maya-K Johnson[1,2], Mercedes Burns[1*]

1. Department of Biological Sciences
   University of Maryland, Baltimore County
   Baltimore, MD 21250
2. Louis Stokes Alliance for Minority Participation Undergraduate program
   University of Maryland, Baltimore County
   Baltimore, MD 21250

From the symposium “The Power of Sexual Selection” presented at the joint virtual meeting of the American Society of Naturalists, Society for the Study of Evolution, and Society for Systematic Biology on June 22nd, 2021

*Email: burnsm@umbc.edu

ORCID
Bacon: 0000-0001-9361-8835
Burns: 0000-0002-9450-8563

This is the author's accepted manuscript without copyediting, formatting, or final corrections. It will be published in its final form in an upcoming issue of The American Naturalist, published by The University of Chicago Press. Include the DOI when citing or quoting: https://doi.org/10.1086/722707 Copyright 2022 by The University of Chicago.

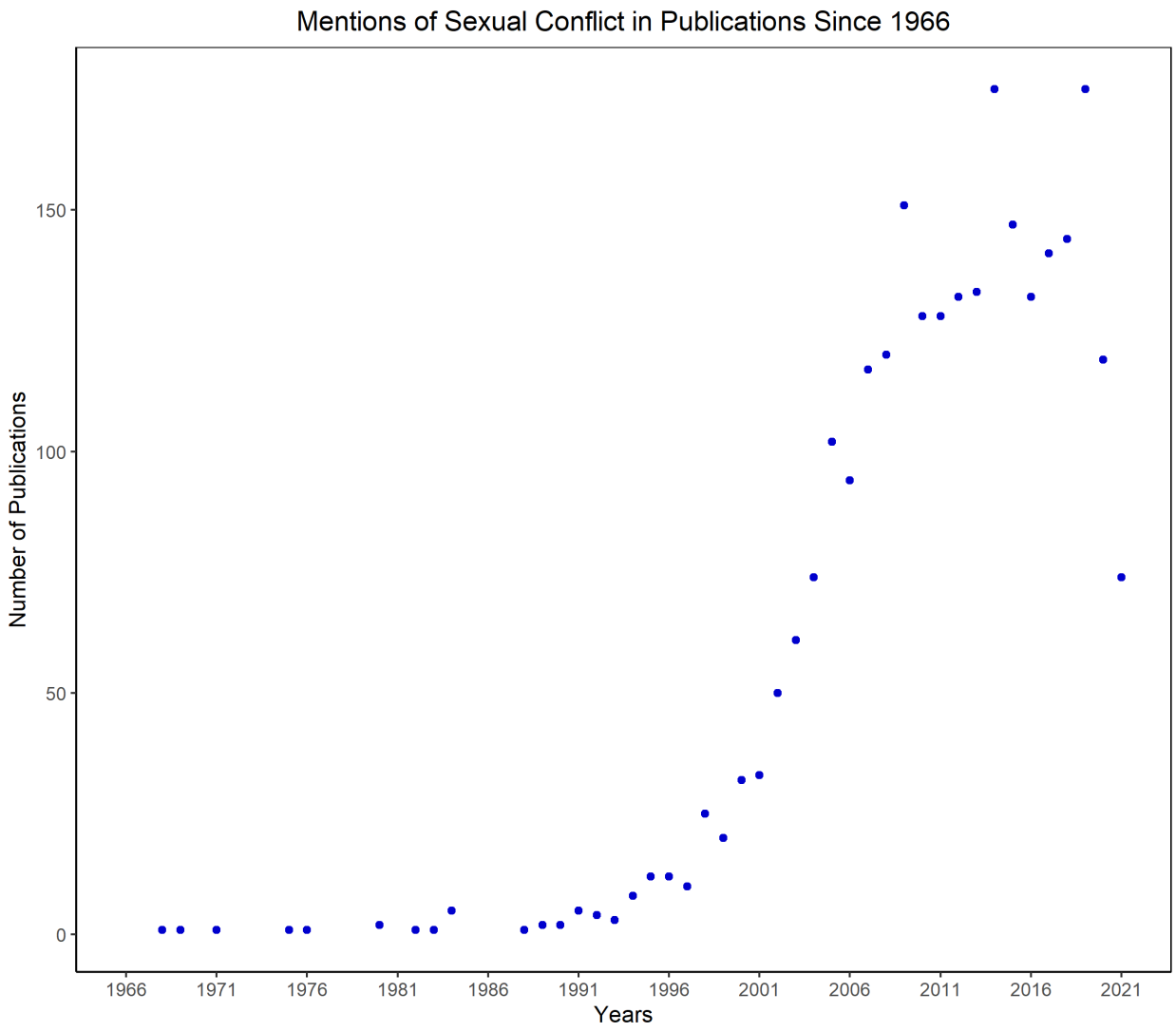


Figure S1. Scatter plot displaying the number of publications each year that mention the term “sexual conflict”. This data was sourced from the database “Web of Science”.

This is the author's accepted manuscript without copyediting, formatting, or final corrections. It will be published in its final form in an upcoming issue of The American Naturalist, published by The University of Chicago Press. Include the DOI when citing or quoting: https://doi.org/10.1086/722770. Copyright 2022 by The University of Chicago.

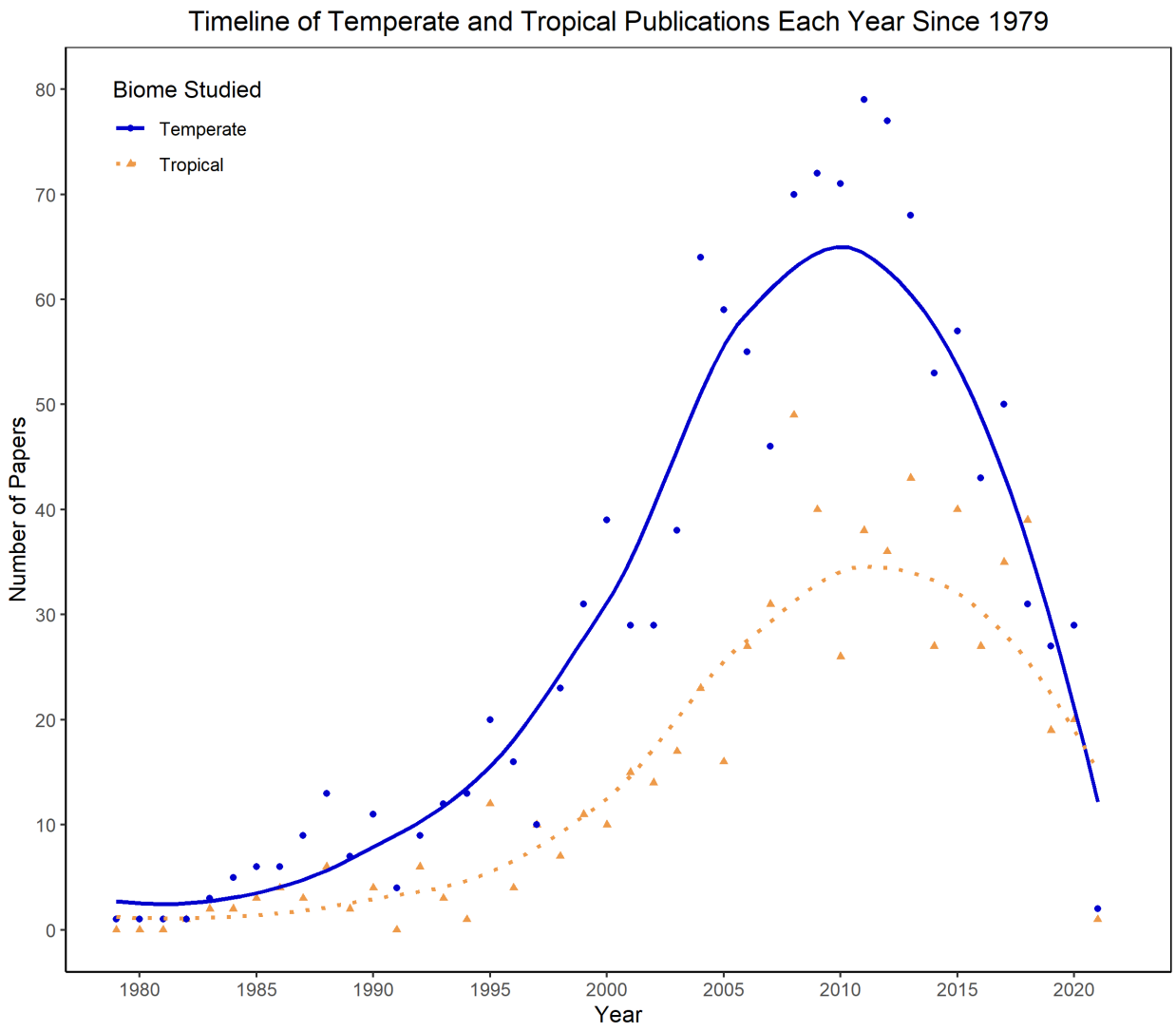
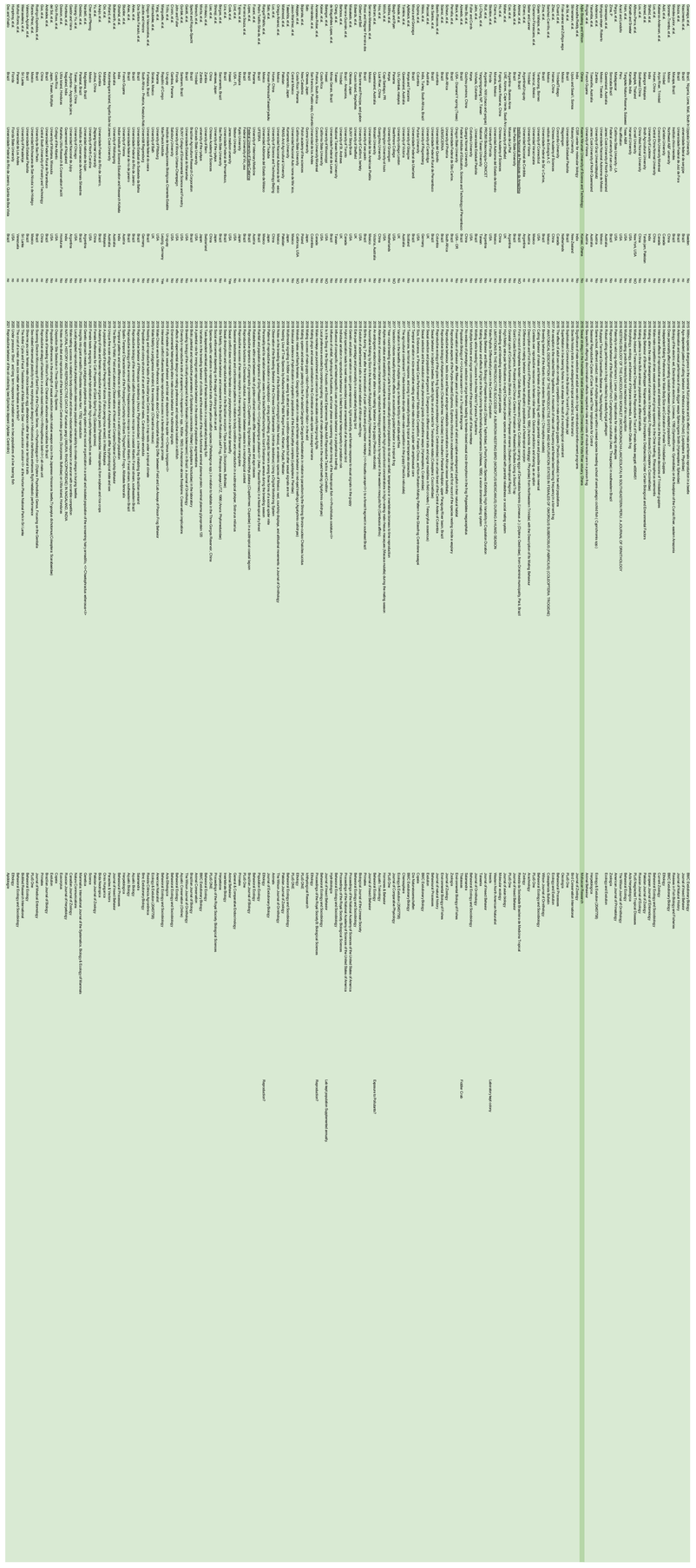


Figure S2. Plot quantifying the number of papers categorized as a temperate or a tropical study within our total sample pile each year. The blue solid curve corresponds to temperate studies, while the tan hashed curve represents tropical studies.

Table S1. Data table of systematic review papers and sexual conflict reporting by publication.

This is the author's accepted manuscript without copyediting, formatting, or final corrections. It will be published in its final form in an upcoming issue of The American Naturalist, published by The University of Chicago Press. Delivery to the JCR archive is delayed in spring.
https://doi.org/10.1086/723747. Copyright 2022 The University of Chicago.

Paper identifier	Information unknown/no access	Not in Scope	Transferred						
Author	**Study Location**	**Lead Author Institution**	**Lead Author Location**	**Conflict**	**Year**	**Title**	**Journal**	**Species**	**Notes**
Johnson	Costa Rica	University of Iowa	USA	no		1982 Sexual Selection in a Brentid Weevil	Evolution		
Olson and McDowell	Suriname/Trinidad	Cornell's	USA	no		1982 A comparison of white-banded manakin (Manacus manacus) populations and lek systems in Suriname and Trinidad	Auk		
Lacey	Mexico	University of Connecticut	USA	no		1983 Population control of an all-female fish, Poeciliopsis monacha-lutkens	Biotropica		
Moulton and Weller	Lagian, Hawaii	university of minnesota	USA	no		1984 Biology and conservation of the Laysan duck (Anas laysanensis)	Condor		
Kitlas and Fitzpatrick	Peru	University of Florida	USA	no		1984 Reproduction and social organization of the black-capped donacobius (Donacobius atricapitus) in southeastern Peru	Auk		
Frank	USA - Florida (everglades)	University of Florida	USA	no		1985 Are mating, and male competition by the fly swap Plagiocephus aesculus (Agaromidae) random within a fly	Biotropica		
Courtney and Parker	Tanzaland, Morocco	University of Liverpool	UK	no		1985 Mating behavior of the figer blue butterfly (Tarucus theophrastus) Competitive male-searching when not all females are captured	Behavioral Ecology and Sociobiology		
Arita and Kiesecker	Hawaii	University of Hawaii	USA	NO		1985 The dynamics of the lek system and mating success in males of the Mediterranean fruit fly, Ceratitis capitata (Wiedemann)	Proceedings of the Hawaiian Entomological Society		
Atkinson and Equihua-Martinez	Veracruz, Mexico	University of Texas, Austin	USA	no		1986 Biology of bark and ambrosia beetles (Coleoptera: Scolytidae and Platypodidae) of a tropical rain forest in southeastern Mexico with an annotated checklist of species	Annals of the Entomological Society of America		
Arakaki and Ganaha	Okinawa	Okinawa prefecture Agricultural Experiment Station	Japan	NO		1986 Emergence pattern and mating behavior of Apanteles flavipes (Cameron) (Hymenoptera: Braconidae)	Applied Entomology and Zoology		
Robert and Olson	USA - TX (Arlinhaus)	Texas A&M	USA - TX	No		1986 Temporal abundance and percent recentruitment of newly-emerged adult female Paratephritis columbae near the larval habitat	Journal of the American Mosquito Control Association		
Courtney and Shapiro	Chile/Argentina	University of Oregon	USA	no		1986 The ecology and behavior of the High-Andean butterfly Hypaurotis eleguendotis (Lepidoptera: Pieridae)	Studies on Neotropical Fauna & Environment		
Van Wetzen and Waagop	Barbados	University of Leiden	Netherlands	no		1987 Adaptive responses to local mate competition by the parasitoid, Telenomus remus	Behavioral Ecology and Sociobiology		
Shelly	Hawaii	University of Hawaii	USA	no		1987 Lek behavior of a Hawaiian Drosophila : Male spacing, aggression and female evolution	Animal Behavior		
Barnai and Green	Thailand	Mahidol University	Bangkok	no		1987 Wolbachia (=rickettsiaspina) in natural populations of anopheline mosquitoes	Journal of the American Mosquito Control Association		
Arita and Kiesecker	Hawaii	University of Hawaii	USA	no		1988 Body size and differential mating success between males of two populations of the Mediterranean fruit fly	Pacific Science		
Carroll	Florida Keys (various)	University of California, Davis	USA	no		1988 Contrasts in reproductive ecology between temperate and tropical populations of Jadera haematoloma, a mate-guarding hemipteran (Rhopalidae)	Annals of the Entomological Society of America		
Lloyd, et al.	Thailand	University of Florida	USA	No		1988 Ecology, flashes, and behavior of congregating Thai fireflies	Biotropica		
Ikeda, et al.	Kyushu, Japan	Kyushu National Agricultural Experiment Station	Japan	no		1988 Geographical difference in mated status and autumn migration in the rice leaf roller moth, Cnaphalocrocis medinalis	Entomologia Experimentalis et Applicata		
Bulger and Hamilton	Botswana	University of California, Davis	USA	No		1988 Interesting, and reproductive success in a natural chacma baboon, Papio cynocephalus ursinus , population	Animal Behavior		
Tarabon and Rabasse	Brazil and Reunion Island, France	Station de Zoologie et de Lutte Biologique, Antibes	France	no		1988 Induction of a thelytokous reproduction in the Aphidius colemani (Hym., Aphidiidae) complex	Journal of Applied Entomology		
Hamilton and Montgomerie	Costa Rica	Queens University	Canada	No		1989 Population demography and execution in a Neotropical demes(fly)(Diptera: Ceratogonidae) in Costa Rica	Journal of Tropical Ecology		
Montague	Hawaii	Bary University	USA	no		1989 The ecology of Hawaiian flower-breeding Drosophila. 2. Adult dispersion and reproductive ecology	American naturalist		
Mangan, et al.	Belize	USDA-ARS	USA	No		1990 Estimation of native scolyomorin (Coleoptera: Dryinae) reproductive activity by release and recapture of sterile females	Environmental entomology		
Forsyth and Alcock	Monteverde, Costa Rica	Queens University	Canada	No		1990 Female mercury and resource defense polygyny by males of a tropical rove beetle, Leistotrophus versicolor (Coleoptera: Staphylinidae)	Behavioral Ecology and Sociobiology		
Crump and Townsend	Costa Rica	University of Gainesville	USA	no		1990 RANDOM MATING BY SIZE IN A NECTROPICAL TREEFROG, HYLA PSEUDOPUMILA	Herpetologica		
Aquino, et al.	Peru	UNMSM	Peru	no		1990 Supplemental Notes on Population Parameters of Northeastern Peruvian Night Monkeys, Genus Aotus (Cebidae)	American Journal of Primatology		
Wolski	Costa Rica	Cornell University	USA	no		1992 Attraction and learning in male finding by solitary bees, Lasioglossum (Dialictus) figueresi Wolski and Nomia triangulifera Vachal (Hymenoptera: Halictidae)	Behavioral Ecology and Sociobiology		
Wolski, et al.	Costa Rica/Puerto Rico	Suny Buffalo	USA	no		1992 Nest-site selection by solitary bees (Hymenoptera: Apoidea) in a Costa Rican tropical dry forest	Behavioral Ecology and Sociobiology		
Wilcox	Tanzania	University of California - Riverside	USA	No		1992 Estimating Reproductive Success of Females and Other Animals With Long and Incompletely Known Reproductive Life Spans	American Journal of Primatology		Technique based?
Marlow and Ricker	Tempe, Arizona, USA	Arizona State	USA	No		1992 Male size, developmental stability, and mating success in natural populations of three Drosophila species	Heredity		
Gasdil	Brazil - Amazonas		Brazil	no		1993 POPULATION BIOLOGY OF THE PROCI (EPTOCATTUS-PENTADACTYLUS) IN A CENTRAL AMAZONIAN RAIN-FOREST	Journal of Primatology		
Zeh, et al.	Panama	Smithsonian Tropical Research Institute	Panama	no		1993 Sexual selection and sexual dimorphism in the harlequin beetle Acrocinus longimanus	Biotropica		
Ahmad and Sharma	Kuala Lumpur, malaysia	Universiti Kebangsaan Malaysia	Malaysia	no		1993 Reproductive behavior of the Malaysian Giant Leaf Insect, Eurycantha calcarata Lucas (Phasmatodea: Diopsiidae)	Behavioral Ecology and Sociobiology		
Berkey, J.O.	Puerto Rico	University of Puerto Rico - College park	Puerto Rico	no		1993 Molar cells, reproductive behavior, and reproductive success in free-ranging, rhesus macaques			
Wimmiller	Costa Rica	Texas A&M	USA	no		1993 Seasonality of reproduction by freeloaving fishes in tropical rainforest streams	Oecologia		
Sorenson	Nassau, Bahamas	University of Minnesota	USA	no		1995 Forced extra-pair copulation and mate guarding in the white-cheeked pintail: Timing and trade-offs in an asynchronously breeding duck	Animal Behavior		
Sherman	Peru	University of Louisville	USA	no		1995 Breeding biology of White-winged Trumpeters (Psophia leucoptera) in Peru	Auk		
Kaufmann and Kaufmann	Costa Rica	Cornell	USA	no		1995 Adaptive male mate choice in the polymorphic guppy, Poecilia gillii, Poeciliidae, Poecilia	Ethology		
Chambers, et al.	Malawi	University of Natal	Scotland, South Africa	No		1995 Egg distribution of the fruit tortoise Cryptodontia lacustris Meyerdirk and C. Sakhanokho (Meyrick) (Lepidoptera: Tortricidae) and their egg parasitoid Trichogrammatidae cryptophilidae Nagarkatti (Hymenoptera: Trichogrammatidae) in macadamia trees in Malawi	African Entomology		
Brooke and Cattheras	Beachwood, Durban, South Africa	University of the Witwatersand	Johannesburg, South Africa	No		1995 Female choice in a feral guppy population: Are there multiple cues?	Animal Behavior		
Brooke and Cattheras	Beachwood, Durban, South Africa	University of the Witwatersand	Johannesburg, South Africa	No		1995 Female guppies are orange as a male choice cue: a manipulative test	South African Journal of Zoology		
Endler and Houde	Trinidad	University of california, Santa Barbara	USA	No		1995 Geographic variation in female preferences for male traits in Poecilia reticulata	Evolution		
Pearson and Geller	Costa Rica	Oregon State University	USA - Washington	no		1995 Mating behavior of the Central American Indigo snake, Drymarchon corais melanurus (Reptilia: Colubridae)	Southwestern Naturalist		
Kingsford and Shine	New South Wales	University of Sydney	Australia	No		1995 Parallel geographic variation in body shape and reproductive life history within the Australian scincid lizard Lampropholis delicata	Functional Ecology		
Godin	Trinidad	Mount Allison University	Canada	no		1995 Predation risk and alternative mating tactics in male Trinidadian guppies (Poecilia reticulata)	Oecologia		
Brady	Queensland, Australia	James Cook University of North Queensland	Australia	no		1995 Reproductive seasonality in tropical satyrine butterflies: Strategies for the dry season	Ecological Entomology		
Wheeden	Costa Rica	University of Saskatchewan	Canada	no		1995 REPRODUCTIVE BEHAVIOR OF FREE-RANGING CONVICT CICHLIDS, CICHLASOMA-NICROFASCIATUM	Environmental Biology of Fishes		
Wilson	Panama	Smithsonian Institution - Dixon	USA	no		1995 Reproductive ecology of the Neotropical Harlequin Bug, Jadera haematoloma (Pentatomidae)	Psyche		
Charles and Belair	Valencia, Trinidad	Ministry of Health	Trinidad	no		1996 Diet composition and fecundity of Anopheles aquasalis in Trinidad, West Indies	Journal of the American Mosquito Control Association		
Godin and Briggs	Quare river, Trinidad	Mount Allison University	Canada	No		1996 Female mate choice under predation risk in the guppy	Animal Behavior		
Briggs, et al.	Quare river, Trinidad	Mount Allison University	Canada	No		1996 Mate-choice copying under predation risk in the Trinidadian guppy (Poecilia reticulata)	Behavioral Ecology		
Backwell and Passmore	Durban	University of Natal	Durban	No		1996 Time constraints and multiple choice criteria in the sampling behavior and mate choice of the fiddler crab, Uca annulipes	Behavioral Ecology and Sociobiology		Fiddler Crab
Ruiz, et al.	Colombia/panama		Colombia	no		1996 Life history and reproductive ecology of Anopheles nuneztovari (Diptera: Culicidae) in Colombia	Journal of Medical Entomology		
Rajula	Sri Lanka	University of veterinary science	Hungary	no		1997 Adaptive sex-ratio manipulation in Pediculus humanus capitis: Possible interpretations of Butler's data	Journal of Parasitology		
Einlen	Panama	Princeton University	USA	no		1997 Alternative reproductive tactics and mate-choosiness in the horned beetle Onthophagus acuminatus (Coleoptera: Scarabaeidae)	Behavioral Ecology and Sociobiology		
Sterck	Indonesia	Utrecht University	Netherlands	no		1997 Determinants of female dispersal in Thomas langurs	American Journal of Primatology		
McDonough	USA - Texas	University of California - Davis	USA	No		1997 Pairing behavior of the nine-banded armadillo (Dasypus novemcinctus)	The American Midland Naturalist		
Dos Santos	Sao Paulo, Brazil	Instituto de Medicina Preventiva and Tropical Medicine	Brazil	no		1997 Population dynamics of the Chagas disease vector Rhodnius prolixus (Triatomine: Reduviidae) in Brazil	Ecology		
Zeh, et al.	French guiana	University of Houston	USA	no		1997 Polyandrous, sperm-storing females: carriers of male genotypes through episodes of adverse selection	Proceedings of the Royal Society of London, Series B: Biological Sciences		
Zeh	Panama	University of Houston	USA	no		1997 Polyandry and enhanced reproductive success in the harlequin beetle-riding pseudoscorpion	Behavioral Ecology and Sociobiology		
Rosenquist and Houde	Trinidad	University of California - Santa Barbara	USA	no		1997 Prior exposure to male phenotypes influences male choice in the guppy, Poecilia reticulata	Behavioral Ecology		
Garfield, et al.	Guatemala	Peregrine fund	USA	no		1997 Sibicoda in swallow-tailed kites: a Journal of Ornithology	The Wilson Bulletin		
Ortiz-Catedral and Rodriguez-Estrella	Mexico	Instituto de Investigaciones Biológicas del Noroeste	Mexico	no		1997 Life History of the Black-Vented Oriole (Icterus wagleri) in the Vicinity of Bay of California, Mexico	Journal of Avian Biology	Baja mexico	
Packer, et al.	Makkovik/P. Zimbabwe	University of Manitoba	USA	no		1998 Correlates of male mating strategies in white-throne (Cardiathanian-smeari)	Animal Behavior		
Kweong	Kenya	Bird College	USA	NO		1998 Ecology and behavior of yoruchet mouse, Sacoscoxus mastersi, in central Kenya	Journal of Mammalogy		
Fernandez and Rebonada	General Lavalle,Argentina	Instituto de Biología y Medicina Experiment	Argentina	no		1998 Effects of clutch size and timing of breeding on reproductive success of Greater Rheas	The Auk		
Gonzalez, et al.	Tikal NP, Guatemala	Wildlife Conservation Society	USA	no		1998 Habitat use and reproductive ecology of the Ocellated Turkey in Tikal National Park, Guatemala a Journal of Ornithology	The Wilson Bulletin		
Gonzalez and Bonvicino	Cuiaba, Paraguay	Universidade Federal	Brazil	no		1998 Life history and ecology of the Black-tufted marmoset, Callithrix penicillata in Brazil	Ecology and Sociobiology		
Griffiths and Magurran	Trinidad	University of St. Andrews	Scotland	no		1998 Sex and schooling behavior in the Trinidadian guppy	Animal Behavior		
Brooke and Cattheras	Beachwood, Durban, South Africa	University of the Witwatersand	Johannesburg, South Africa	no		1999 Interbreed and intrabreed selection, sneak copulation and male ornamentation in guppies (Poecilia	South African Journal of Zoology		
Brigida and Perez	Panama	University of Oxford	UK	no		1999 Latking in Neotropical Owl Butterflies, Caligo (Hübner) and C. oileus (Lepidoptera: Brassolinae)	Journal of Insect Behavior		
Brooke	Townsville, Australia	James Cook University of North Queensland	Australia	No		1999 MATE CHOICE COPYING IN GUPPIES: FEMALES AVOID THE PLACE WHERE THEY SAW COURTSHIP	Behavior		
Ward and Hall	Ghana	University of Ghana, Legon	Ghana	no		1999 Reproductive ecology of the Ghanian Pygmy Sperm Whale, Kogia breviceps (Blainville, 1838) (Cetacea: Physeteridae)	Behavioral Ecology and Sociobiology		
Brockman	Madagascar	University of North Carolina	USA	no		1999 Reproductive behavior of female Propithecus verreauxi at Beza Mahafaly, Madagascar	International Journal of Primatology		
Collard and Ferguson	Zimbabwe	Natural History Museum	UK	no		1999 Reproductive ecology of Commerson's leaf-nosed bats Hipposideros commersoni (Chiroptera: Hipposider	South African Journal of Zoology		
Fellowes, et al.	Australia, Malaysia, South Africa,	the Imperial College at Silwood Park	UK	no		1999 Sex allocation and local mate competition in Cotesia flavipes (Hymenoptera: Braconidae)	Behavioral Ecology and Sociobiology		
Digby	Brazil	University of California - Davis	USA	no		1999 Sexual behavior and ecological populations in a wild population of common marmosets (Callithrix jacchus)	Folia Primatologica		
Dobson, et al.	Gainesville, Florida	University of Florida	USA	no		1999 Spatial and temporal distribution of the Neotropical Termite Nasutitermes corniger (Isoptera: Termitidae)	Ecology and Sociobiology		
Wiedenkr, et al.	Brazil	Center for International Forestry Research	Indonesia	no		1999 Termite swarming in the northeastern Atlantic rain forest of Brazil	Studies on Neotropical Fauna & Environment		
Birte	Queensland, Australia	Cornell University	USA	no		1999 Unusual timing of copulations in the Australian Brush-turkey	The Auk		
Schulze, et al.	Guatemala	Penn State University	USA	No		2000 Behavior, diet, and breeding biology of double-toothed kites at a Guatemalan lowland site	Condor		
Bandgnant and Monteiro-Filho	Curitiba, Brazil	Universidade Federal do Vales Grosso do Sul	Brazil	No		2000 Behavior and daily activity of the squirrel Sciurus ingrami in a secondary araucaria forest in southern Brazil	Canadian Journal of Zoology		
Bonvicino, Gadagnolo	Cuiaba, Paraguay	Universidade Federal	Brazil	no		2000 Diet of the Black-tufted marmoset, Callithrix penicillata	Ecology		
Howarpert, et al.	Brazil	University of California - San Diego	USA	no		2000 Genetic analysis of group composition and breeding systems in a wild common marmoset (Callithrix jacchus) population	International Journal of Primatology		
Giraud, et al.	Brazil	Universit Paris 13	France	No		2000 Population structure and mating biology of the polygynous ponerine ant Gnamptogenys striatula in Brazil	Molecular Ecology		
Hoelzer	Costa Rica	University of Michigan	USA	no		2000 Resource defense polygyny in a tropical bee, Paratrigona impunis	Proceedings		
Jiggins, et al.	Uganda	Institute of Ecology and Environmental Sciences IEES-Paris	UK	no		2000 Sex-ratio distorting Spiroplasma causes sex-role reversal in the butterfly Eurema	Proceedings of the Royal Society of London, Series B: Biological Sciences		
Kraaijeveld	Kenya	Institute of Ecology and Environmental Sciences IEES-Paris	France	no		2000 Sexual reproduction by both queens and workers in the preverse ant Hypoponera sulcata	Insectes Sociaux		
Appelbaum and Cruz	Hispaniola	University of Texas marine Science Institute	USA	no		2000 The Role of Male Choice, Copying and Disruption Effects in Mate Preference Determination of Lima peruginae (Cyprinodontiformes, Poeciliidae)	Ethology		
Brightsmith	Peru	Duke University	USA	no		2000 Use of arboreal termitaria by mealy birds in the Peruvian Amazon	The Condor		
Ellis, et al.	Kenya	University of Nairobi	Kenya	no		2001 Behavioral ecology of the Ostrich in Kenya	The Auk		
Pietrzak/Mulloney	Argentina - Buenos Aires	University of Minnesota	USA	no		2001 Behavioral adaptions for breeding in arboreal nesting Speckled Teal a Journal of Ornithology	The Wilson Bulletin		
Alvarado	Colombia	Princeton University	New Jersey, USA	NO		2001 Comparison of the reproductive biology of two Neotropical Wrens in an unpredictable environment in Northeastern Colombia	The Auk		
Brown and Eady	Nigar, Africa and South India	University of Sunderland	UK	No		2001 Functional incompatibility between the fertilization systems of two allopatric populations of Calindoschoma maculata (Coleoptera: Brachidae)	Evolution		
Stotz, et al.	Inlia	Beebe University	USA	no		2001 GENETIC CONSEQUENCES OF POLYGYNY AND SOCIAL STRUCTURE IN AN OVIPA FRUIT BAT, CYNOPTERUS SPHINX. II. VARIANCE IN MALE MATING SUCCESS AND EFFECTIVE POPULATION SIZE	Evolution		
Kelly, et al.	Queensland, Australia	Queensland University, Brisbane	Australia	no		2001 Life History and Reproductive Strategies of Rhea Tyk Hydrates: Implications for Social Evolution in Apes	Ecology		
Hopkins	Quebrada Blanco, Peru	German Primate center	Germany	no		2001 Interspecific variation of scent marking behavior in red tamarins, Saguinus mystax and Saguinus fuscicollis	Ethology		
Kemp	Cairns, QKS Australia	James Cook University	Australia	No		2001 Investigating the consistency of male-mating behavior in the territorial butterfly Hypolimnas bolina (Lepidoptera : Nymphalidae)	Journal of Insect Behavior		
Kelly	Tanzania	University of California, Davis	USA	no		2001 Lineage Loss in Sengoroli Cheetahs: Consequences of High Reproductive Variance and Heritability of Fitness on Effective Population Size	Conservation Biology		
Pitcher and Evans	Trinidad	University of Toronto	Canada	no		2001 Male phenotype and sperm number in the guppy (Poecilia reticulata)	Canadian Journal of Zoology		
Kemp	Australia	James Cook University	Australia	no		2001 Male Reproductive Tactics and Sperm Competition Mechanisms in Dimorphic Males: Combatitrait in Chinese, Japan	The Auk		
Kemp and Rutowski	Australia	James Cook University	Australia	no		2001 Spatial and temporal patterns of territorial male-mating behavior in Hypolimnas bolina (L.) (Lepidoptera: Nymphalidae)	Journal of Natural History		
Kemp	Australia	James Cook University	Australia	no		2001 The ecology of female receptivity in the territorial butterfly Hypolimnas bolina (L.) (Nymphalidae): implications for male location by males	Australian Journal of Zoology		
Luddecke, H	Colombia	Universidad de los Andes	Colombia	no		2001 Variation in mating pattern in a population of the Andean frog Hyla labialis	Amphibia-Reptilia		
Bourne, et al.	Kaieter National park, Guyana	University of Missouri-St Louis	USA	No		2001 Vocal communication and reproductive behavior of the frog Colostethus beebei in Guyana	Journal of Herpetology		
Clout	Kakapo	Massey University	New Zealand	No		2002 Breeding Biology and Sex Ratio Bias in Offspring of Kakapo Strigops habroptilus (Aves: Psittaciformes) in Hauteboisella canton (Coleoptera: Cerambycidae)	Behavioral Ecology and Sociobiology		
Coddington and Alexander	Lake Malawi	University of the Witwatersand	South Africa	No		2002 Color patterns and species recognition in four closely related species of Lake Malawi cichlid	Behavioral Ecology		
Luo, et al.	Multiple: Reunion, Guatemala, Kenya	International Centre of Insect Physiology and Ecology (ICIPE)	Kenya/Poland	No		2002 Consistency in courtship pattern among populations of medfly (Diptera: Tephritidae): Comparisons among wild strains and strains mass reared for sit operations	The Florida Entomologist		
Nielsen and Eberhard	Costa Rica, Alajuela	Universidad de Costa Rica	Costa Rica	No		2002 Decisions during courtship by male and female medflies (Diptera, tephritidae): Correlated changes in male behavior and female acceptance criteria in mass-reared flies	The Florida Entomologist		
Pochron and Wright	Madagascar	Stony Brook University	USA	no		2002 Dynamics of testes size compensates for variation in male body size	Evolutionary Research		
Ramos, et al.	Sao Paulo, Brazil	Universidade Estadual de Campinas	Brazil	no		2002 Female choice for male courtship in the guppy (Poecilia reticulata)	Behavioral Ecology and Sociobiology		
Del Castillo and Nunez-Farfan	Mexico City, mexico	Universidad Nacional Autónoma de México	Mexico	No		2002 Female mating success and risk of pre-reproductive death in a polandrous grasshopper	Oikos		
Sri Sasi, et al.	Indonesia	Universitas national	Netherlands	no		2002 Sexual dimorphism and reproductive success in Sumatran orang-utans	Behavioral Ecology		
Rubenstein	Kenya	University of California, Davis	USA	no		2002 SOCIAL STRUCTURE AND MICROGEOGRAPHIC SONG VARIATION IN WEDGE-TAILED SABERWING (CAMPYLOPTERUS CURVIPENNIS) IN VERACRUZ, MEXICO	International Journal of Primatology		
Jossart, et al.	Trinidad	Carleton University	Canada	no		2002 Sperm competition risk and mate choice in male Trinidadian guppies, Poecilia reticulata	The Auk		
Kaufmann, Indis,	Costa Rica	Universidad de Ciencias Naturales	Costa Rica	no		2002 Sperm competition risk and mate choice in male Trinidadian guppies, Poecilia reticulata	Journal of Tropical Ecology		
Kinlason, et al.	Costa Rica/Venezuela	Harvard University	USA	no		2002 Strict monandry in the preverse ant genus Solenopsis suggests that colony size and complex divine mating system evolution in social insects	Molecular Ecology		
Ungurung, et al.	French Guyana	University of Vienna	Austria	no		2002 Strong male/male competition allows for nonchoosy females: high levels of polygynandry in a territorial frog with paternal care	Molecular Ecology		
Zeisler, et al.	Brazil	University of Rio Verde	Brazil	no		2002 Testicular structure and spermatogenesis of Amazonian freshwater curvo ortogonal Paleontologist of Isotro	Zagrib		
Dubuc, et al.	Puerto Rico	Universite de Montreal,	Canada	no		2003 Testing the priority of access model in a seasonally breeding, promiscuous species	Behavioral Ecology and Sociobiology		
Dunn, et al.	Tanzania, Tanzania	Leiden University, Netherlands	Netherlands	no		2003 The Ecology and Behavior of the Endangered Black-footed Ferret, Mustela nigripes (Audubon and Bachman)	Journal of Mammalogy		
Chon Chen and Fernald	Lake Tanganyika, Africa	Stanford University	USA	No		2003 Visual Information Alters Changes Between and Photoperiod Mating during Social Interactions in a Cichlid Fish (Neolamprologus tanganicanus)	PLoS One		
Toledo, et al.	Brazil	Universidade Estadual de Campinas	Brazil	no		2012 Alternative reproductive modes of Atlantic forest frogs	Journal of Ethology		
Chu, et al.	Zambia	Kyoto University	Japan	no		2012 Alternative Reproductive Tactics in the Shell-Brooding Lake Tanganyika Cichlid Neolamprologus brevis	International Journal of Evolutionary Biology		
Willis, et al.	Mexico	University of Texas	USA	no		2012 An Indirect Cue of Predation Risk Counteracts Female Preference for Conspecifics in a Naturally Hybridizing Poeciliid	PLoS One		
Kelly, et al.	Hawaii	Cornell University	USA	no		2012 Ecological Correlates of Extra-Pair Paternity in Birds of Prey and Owls Accipitriformes, Strigiformes	Auk		
Contreras-Barberena, et al.	Guerrero, Mexico	Universidad Autónoma del Estado	Mexico	no		2012 Ecological Correlates of Extra-Pair Paternity in Birds of Prey and Owls Accipitriformes, Strigiformes	Ecology		
Coppari, et al.	Argentina	Universidad Nacional de Rosario,Ar. on	Mexico	No		2012 GAME OPPORTUNITY HYPOTHESIS AND DEFENSIVE PATERNITY IN MALES ALBATROSSES (THALASSARCHE MELANOPHRIS)	Revista Cubana de Zoología		
Bal and Swaroop/Nayak	Taiwan	National Scientific and Technical Research Council	Argentina	No		2012 Can't you find me? Female sexual response in an Argentinean tarantula (Acanthoscurria Theraphosidae) Puedes encontrarme? Respuesta sexual en una tarántula de Argentina (Acanthoscurria Theraphosidae)	American Journal of Primatology		
Budiati, et al.	Pakistan	Biodiversity research center	Taiwan	no		2012 Disentangling roles and mate fidelity in a monogamous population under strong mate-role competition	Animal Behavior		
Ellis, et al.	Pakistan	Pir Mehr Ali Shah Arid Agriculture University	Pakistan	No		2012 Distribution, Hosts and Biology of Diaretiella rapae (M'Intosh) (Hymenoptera: Braconidae: Aphidiinae) in Punjab, Pakistan	Pakistan Journal of Zoology		
Ellis, et al.	Australia, Lesser Antilles	Ecology Institute	Netherlands	no		2012 Dispersal Ecology and Population Genetics of Adult and Juvenile Red Crabs (Gecarcoidea natalis) in Western Australia, a JOURNAL OF ORNITHOLOGY	Ecology		
Clement-Kent	Australia - Alligator Creek, Queensl	Queensland University	Australia	No		2012 Early sexual experience significantly affects sexual behavior in male guppies	Animal Behavior		
Farias, et al.	Campo Grande, Brazil	Universidade Federal do Mato Grosso do Sul	Brazil	no		2012 Feeding-mating system in dioptous populations of Psychotria carthagenensis Jacq. (Rubiaceae) in Brazilian Cerrado	Plant Systematics & Evolution		
Tung, et al.	Kenya	University of Chicago	USA	no		2012 Genetic Effects on Sibling Success and Partner Choice in a Social Mammal	American Naturalist		
Hanelt, et al.	Lake Victoria, Kenya	University of New Mexico	USA	no		2012 Going Solo: Discovery of the First Parthenogenetic Gordid (Nematomorpha: Gordida)	PLoS ONE		
Hoffmann, et al.	Brazil	Universidade Federal	Brazil	no		2012 Hatchling Sex Ratio in Tropical Turtles: Effects of Temperature and Moisture	Chelonian Conservation and Biology		
Todd, et al.	Australia	Deakin University	Australia	no		2012 High incidence of multiple paternity in an Australian snapping turtle (Elseya dhalguba)	Australian Journal of Zoology		
Firdaw, et al.	Unnam, India	ICAR Research Complex for North Eastern Hill Region	India	No		2012 HOST PLANTS ALTER THE REPRODUCTIVE BEHAVIOR OF PIERIS BRASSICAE (LEPIDOPTERA: PIERIDAE) AND ITS SOLITARY LARVAL ENDO-PARASITOID, HYPOSOTER EBENINUS (HYMENOPTERA: ICHNEUMONIDAE) IN A CRUCIFEROUS ECOSYSTEM	The Florida Entomologist		
Gullotta-Ferreira and Bispo	Brazil	Universidade de Sao Paulo	Brazil	no		2012 Male and female interactions during courtship of the frestropsyll damselfly Mnesarchaea pulcra (Odonata, Calopterygidae)	Acta Ethologica		
Zarlon, et al.	Brazil	Universidade do Parana,	Brazil	no		2012 Male-Produced Sex Pheromone of the Stink Bug Edessa meditabunda	Journal of Chemical Ecology		
Zarlon, et al.	Brazil	Universidade do Parana,	Brazil	no		2012 Mating Behavior and Male-Produced Sex Pheromone of the Stink Bug Edessa meditabunda (Hemiptera: Pentatomidae)	Journal of Insect Behavior		
Joachim and Schlupp	Texas, USA	University of Oklahoma	USA	no		2012 Mating preferences of Amazon molly (Poecilia formosa) in multi-male populations	Behavior	Lab Raised?	
Aranek, et al.	Argentina	Universidad Nacional del Litoral, Ciudad Universitaria,	Argentina	NO		2012 Mating system and population analysis of the broad-snouted caiman (Caiman latirostris) using microsatellite markers	Amphibia-Reptilia		
Valencia-Aguilar, et al.	Colombia	Universidad del Valle	Colombia	no		2012 Microhabitats for Oviposition and Male Courtship Attendance in Hydrobatodiatom aureogutttatum (Acuna Cantaloube)	Copeia		
Rivera, et al.	Bahia/Argentina	Instituto de Ecologenia Andina CONICET	Argentina	no		2012 Nesting Habitat of the Tucuman Parrot Amazona tucumana in an arid growth cloud-forest of Argentina	Bird Conservation International		
Gutierrez-Ibanez and Wcislo	Panama, Mexico	Smithsonian	USA	no		2012 Nest Site Preferences of Neotropical Sweat Bees (Hymenoptera: Apoidea: Halictidae) and the Strength of Sexual Selection	Ethology		
Gutierrez Ferreira and Dos Claro	Brazil	Universidade de sao paulo	Brazil	no		2012 Reproductive behavior of Acanthopterotroctes furcifer, 1876 (Odonata: Coenagrionidae)	International journal of entomology		
Quelroga, et al.	Brazil	Universidade Estadual de Paraiba	Brazil	no		2012 Reproductive biology of Scaeba tachardiae (L) (Blattorthere, Anidae) in a tropical estuary in Brazil	Zoologia		
Hu, et al.	Shaanxi, China	Graduate University of the Chinese Academy of Sciences	China	no		2012 Reproductive competition and facial testosterone in red-crown gold petaloc (Macropodia rostrolineata)	Behavioral Ecology and Sociobiology		
Scriber, et al.	Madagascar	University of Pisa	Italy	no		2012 Scavenging around mating: factors affecting arousal in red Lemur calls	Primates		
Ward and Ward/Ward C	Kenya	University of Pisa	Italy	no		2012 Sex-biased dispersal of a Pygmy Chimpanzee population in response to intersexual mate-mating in a colonial seabird	Behavioral Ecology and Sociobiology		
Yu, et al.	Thousand Island Lake, China	Zhejiang University	China	no		2012 Sex-Biased Dispersal of a Frog (Odorrana schmackeri) Is Affected by Patch Isolation and Resource Limitation in a Fragmented Landscape	PLoS ONE		
Dall'Olio, et al.	Madagascar	Universite de Pisa	Italy	no		2012 Sexual Signalling in Propithecus verreauxi. Male "Chest Badge" and Female Male Choice	PLoS One		
Ferreira, Bispo	Brazil	Universidade de Sao Paulo	Brazil	no		2012 Sexual Signals and Male Mating Success in Neotropical Toxomerus (Diptera, Syrphidae)	Ethology		
Bispo/Rodrigues	Brazil	Universidade Federal de Santa Catarina,	Brazil	no		2012 Spatial and temporal variations of the mating/predation in a species group: variation and intensity of acoustic traits	Behavioral Ecology		
Kondo, et al.	Zambia	University of Bern	Switzerland	no		2012 Spawning Coordination of Males in a Shell-Brooding Cichlid	Ethology		
Kondo, et al.	Japan	University of Ryukyus	Japan	no		2012 Spawning habitat and early development of Lucinoplice calyptratus (Cichlidae)	Environmental Biology of Fishes		
Ringler, et al.	French Guiana	University of California - Los Angeles	USA	no		2012 The Female Perspective of Mating in A. binocula, a Territorial Frog with Paternal Care - A Spatial and Genetic Analysis	PLoS ONE		
Tabor, et al.	Costa Rica/Panama	Smithsonian Institution	USA	no		2012 Vocalizations and Courtship Behavior of the Panamanian Golden Frog, Atelopus zeteki	Herpetological Conservation		
Zhu, et al.	Changsha, China	Central South University of Forestry & Technology	China	no		2013 Adaptive strategies of overwintering adults: Reproductive diapause and mating behavior in a gregarious, Semiandrobiotic spiroidinn (Orthoptera: Catantopidae)	Insect Science		
Poelman, et al.	French guiana	Wageningen University	Netherlands	NO		2013 Amazon poison frogs (Rheinbergia amazonica) use different phytotem characteristics to determine their suitability for egg and tadpole deposition	Evolutionary Ecology		
Barron, et al.	Queensland, Australia	Washington State University	USA	no		2013 Body condition influences sexual signal expression independent of circulating androgens in males not backed by sexual	General & Comparative Endocrinology		
Gramopurohit and Kadler	Karnataka, India	University of Pune	India	no		2013 Changes in Plasma Sex Steroids in Relation to Reproductive Behavior of the To



This is the author's accepted manuscript without copyediting, formatting, or final corrections. It will be published in its final form in an upcoming issue of The American Naturalist, published by The University of Chicago Press. Delivery to JSTOR begins after the JSTOR archive moving wall expires.
https://doi.org/10.1086/725717. Copyright 2022 The University of Chicago.

Paper screened	Information extracted	Contact author	Non-Animal	Species

Author	Study Location	Lead Author Affiliation	Lead Author Location	Conflict (Y/N?)	Year	Title	Journal	Species	Notes
Abalos, et al.	France	Universitat de Valencia	Spain	No		2020 No evidence for differential sociosexual behavior and space use in the color morphs of the European common wall lizard (Podarcis muralis)	Ecology and Evolution		
Abbott and Stewart	USA - CO	University of North Texas	USA - TX	No		1993 Male search behavior of the sheefly Phetrenanda balda (Hagen) (Pterophlebia: Pteronarcyidae), in relation to dramming	Journal of Insect Behavior		
Abjörnsson, et al.	Sweden - Scania	Lund University	Sweden	No		2000 The influence of predator regime on reproductive traits in Gammarus pulex populations	Hydrobiologia		
Abolins-Abols, et al.	USA - CA	Indiana University	USA	No		2016 Effect of acute stressor on reproductive behavior differs between urban and rural birds	Ecology & Evolution (2040758)		
Abrego, et al.	Argentina - Neuquén	Universidad Nacional de	Argentina	No		2019 Male performance and associated costs in successive sexual encounters in a polygynous web wolf	Acta Ethologica		
Allihans and Strassmann	USA	Rice University	USA	No		2007 Adult Yellow-crowned Night-herons Face in Opposite Directions at the Nest: a Journal of Ornithology	The Wilson Journal of Ornithology		
Ahmadi, et al.	Iran - Shiraz River	University of Tehran	Iran	No		2011 Sex-biased, gonadal histology and biological indices of fall and spring Caspian lamprey (Caspiomyzon wagneri) spawning migrants in the Shirud River, Southern Caspian Sea	Environmental Biology of Fishes		
Ahtiainen, et al.	Finland	University of Jyväskylä	Finland	No		2004 Decreased sexual signalling rewards reduced stability in small populations of the drumming wolf spider Hygrolycosa rubrofasciata	Proceedings of the Royal Society of London. Series B: Biological Sciences		
Ahtiainen, et al.	Finland - Espoo	University of Jyväskylä	Finland	No		2004 Sexual advertisement and immune function in an arachnid species (Lycosidae)	Behavioral Ecology		
Akçay, et al.	USA (Seattle)	University of Washington	USA	Yes		2012 Who initiates extrapair mating in song sparrows?	Behavioral Ecology	Bird	
Aku-Kokkola, et al.	USA - FL	University of Helsinki	Finland	No		2010 Interesting avoidance in a parasitoid fly (Heterotrichina formosa)	Behavioral Ecology and Sociobiology		
Albert and Schluter	Canada - BC	University of BC	Canada	No		2004 Reproductive Character Displacement Of Male Stickleback Mate Preference: Reinforcement Or Direct Selection?	Evolution		
Albert, et al.	Spain	Estación Biológica de Doñana	Spain	No		2010 Genetic management of an amphibian population after a high-temperature outbreak	Conservation Genetics		
Alcock and Smith	Australia - Armidale	Arizona State university	USA - AZ	No		1985 Landmark defense and scramble competition mating systems in two Australian territorial flies (Diptera)	Journal of the Kansas Entomological Society		
Alderson, et al.	Canada	McMaster University	Canada	No		1999 Determining the reproductive behaviour of individual brown headed cowbirds using microsatellite DNA markers	Animal Behaviour		
Aldridge and Brown	USA - NY	ST. Louis University	USA	No		1995 Male reproductive cycle, age at maturity, and cost of reproduction in the timber rattlesnake (Crotalus horridus)	Journal of Herpetology		
Alem, et al.	France and USA	Queen Mary University of LoN		No		2010 What determines male-pair Cognitive constraints and pair capita attraction of females limit male aggregation in an acoustic moth	Animal Behaviour		
Alexander and Stewart	USA	University of North Texas	USA	No		1996 Description and theoretical considerations of male finding and other adult behaviors in a Colorado population of Chaoborus salsulus (Pleroptera: Perlidae)	Annals of the Entomological Society of America		
Alexandre and Roe	Switzerland	University of Lausanne	Switzerland	No		2007 Breeding role is associated with phenotypic traits and with sunstainors in female barn owls	Behavioral Ecology		
Almeda, et al.	Spain	Celias	UK	No		2012 Cuckoldry features of introduced pumpkinseed sunfish (Lepomis gibbosus) in contrasting environmental conditions in southern Europe	Canadian Journal of Zoology		
Alonso, et al.	Spain	Museo Nacional de Ciencias	Spain	No		2012 Male display areas in explosive leks: the importance of food resources for male mating success	Behavioral Ecology		
Amaral, et al.	Argentina - Santa Fe	Ciudad Universitaria	Argentina	No		2012 Mating system and population analysis of the broad-snouted caiman (Caiman latirostris) using microsatellite markers	Herpetologica		
Ambacher, et al.	USA - HI	University of Wisconsin	USA	No		2016 Reproductive and foraging success of the Eastern Bluebird (Sialia sialis) in relation to vegetation height: a Journal of Ornithology	The Wilson Journal of Ornithology		
Ambarlı	Turkey - ND	DUZCE University	Turkey	No		2016 Litter size and basic diet of brown bears (Ursus arctos, Carnivora) in northwestern Turkey	Mammalia: International Journal of the Systematics, Biology & Ecology of Mammals		
Anderson	USA - MO	Washington University	USA	No		2010 Effects of Movement and Mating Patterns on Gene Flow among Overwintering Infuenza of the Timber Rattlesnake (Crotalus horridus)	Copeia		
Anderson, et al.	Japan - Tohoku	Fukushima University	Japan	No		2019 Mating of escaped domestic pigs with wild boar and possibility of their offspring migration after the Fukushima Daiichi Nuclear Power Plant accident	Scientific Reports		
Andreev, et al.	Bulgaria	Institute of Biodiversity an	Bulgaria	No		2020 Analysis of Skin Secretions of Iberia amnicolata (Linnaeus, 1758) (Reptilia: Serpentes), with Focus on the Complex Compounds and Their Possible Roles in the Chemical Communication	Molecules		
Andrade	Australia - Perth	University of Toronto at S	Canada	No		1996 Sexual selection for male sacrifice in the Australian redback spider	Science (Washington)		
Andrade	Australia - Perth	University of Toronto at S	Canada	No		1996 Sexual selection for male sacrifice in the Australian redback spider	Science (Washington)		
Andrade	USA	Cornell University	USA	No		2006 Disease-mediated interbreeding depression in a large, open population of cooperative crows	Proceedings of the Royal Society B: Biological Sciences		
Annan, et al.	UK - England	University of Oxford	UK - Oxford	No		2014 Neighbour-by-group composition and within-group relatedness drive extra-group paternity rate in the European badger (Meles meles)	Journal of Evolutionary Biology		
Anna, et al.	USA - OR	University of Oxford	UK	No		2007 First evidence for heritable variation in cooperative breeding behaviour	Proceedings of the Royal Society B: Biological Sciences		
Antczak, et al.	Poland - Western	Adam Mickiewicz Univer	Poland	No		2012 Sex differences in ovipositing behaviour of Great Grey Shrike Lanius excubitor: Do males have better imparting skills than females?	Behavioural Processes		
Antonelli, et al.	USA - FL	University of Florida	USA	No		2009 Reproductive Ecology of Frogs in a Seasonally Dry Amazonian landscape	Copeia		
Andoh and Shand	USA - NY	University of Wisconsin	USA	No		1992 Mating system of Brazen katydids (Hyperaspidius Brazeniodes)	Ecological Entomology		
Aonuma and Watanabe	Japan - Hokkaido	Hokkaido University	Japan	No		2012 Changes in the Content of Brain Biogenic Amine Associated with Early Colony Establishment in the Queen of the Ant, Formica japonica	PLoS One		
Apfelbeck, et al.	Germany, Spain, Iv	University of Glasgow	Scotland	No		2007 Testosterone, territorial response, and song in seasonally breeding tropical and temperate stonechats	BMC Evolutionary Biology		
Arage-Ayiy, et al.	Germany	Max Planck Institute for C	Germany	No		2016 Timing of extrapair fertilizations: extrapair fertilization trade-offs or pair synchrony spillovers?	Behavioral Ecology		
Arcese, et al.	USA - Vancouver	University of British Colu	Canada	No		2002 Inbreeding, Heterozygosity and Morphological Variation in Song Sparrows	Copeia		
Arcobaglio, et al.	USA - CA, CA	University of California -	USA	No		2020 Parallel evolution of the summer steelhead ecotype in multiple populations from Oregon and Northern California	Conservation Genetics		
Arioli, et al.	Germany, Poland,	University of Zurich	Switzerland	No		2010 Genetic diversity in water frog hybrids (Pelophylax esculentus) varies with population structure and geographic location	Molecular Ecology		
Arli, et al.	Sweden	Swedish Univ. Agri. Sci.	Sweden	No		2013 Effect of Geolocators on Migration and Subsequent Breeding Performance of a Long-Distance Passerine Migrant	PLoS One		
Arli, et al.	Sweden	Lund University	Sweden	No		2004 Breeding synchrony does not affect extra-pair paternity in great reed warblers	Behavior		
Arnqvist	Sweden (Northern)	Umeå University	Sweden	No		1992 Genital morphology and function in a seed beetle: male genital spines deter female copulatory use of a male genital apparatus	Evolution		
Arnqvist	Sweden (Northern)	Umeå University	Sweden	No		1992 Spatial variation in selective regimes: Sexual selection in the water strider, Gerris odontogaster	Evolution		
Arrington, et al.	USA - OH	Dennison University	USA	No		2009 Foraging Behavior of Male and Female Mosquitofish (Gambusia affinis) in Single- and Mixed-Sex Groups	Journal of Freshwater Ecology		
Aspi and Hoffmann	Australia	University of Oulu	Finland	No		1998 Female encounter rates and fighting costs of males are associated with lek-size in Drosophila simplex/sigra	Behavioral Ecology and Sociobiology		
Atkins, et al.	USA - WA	Andrews University	USA - MI	No		2010 CHIPOTSTEN BEHAVIOR IN GLAUCOUS WINGED GULLS (LARUS GLAUCESCENS). A JOURNAL OF ORNITHOLOGY	The Wilson Journal of Ornithology		
Atkinson, et al.	Canada - Northwest	Simon Fraser University	Canada	No		2002 Male Reproductive Strategies and Spermal Quality in Chinook Salmon: Broodstock Versus Wild Fish in a Hatchery Environment (Oncorhynchus Tshawytscha)	Transactions of the Royal Society of London. Series B: Biological Sciences		
Atsumi and Kitzpatrick	Japan	Hokkaido University	Japan	No		2020 Wild mice search revealed large-scale variations in breeding season and nuptial coloration in a mutually n-mated fish, n>1? Molecular Ecology	Ecological Research		
Attira and Peter	Switzerland - Tess	University of Zu rich	Switzerland	No		2003 Social environment and reproductive interference affect reproductive success in the frog, Rana temporaria	Behavioral Ecology		
Attaway, et al.	Florida, Kentucky	University of Exeter	UK	No		2010 Oviscription and migratory strategy of the northwestern frog, Occipitalis Necrotica	Animal Behaviour		
Audi, et al.	USA	West Chester University	USA	No		2016 Consequences of mating and predation risk for longevity in a freshwater snail: alloitance makes the heart beat longer	Journal of Evolutionary Biology		
Auer, et al.	Canada - Ontario	Trent University Peterbo	Canada	No		2010 Sexual Selection and Reproductive Behavior in Male Lake Whitefish (Coregonus Clupeaformis)	Copeia		
Bacchiocchi, et al.	Italy - North	Università degli Studi di Fi	Italy	No		2008 Reproductive behavior of the freshwater mussel Dreissena polymorpha in Italy: a comparison between two populations	Arch Fur Hydrobiology		
Badia, et al.	USA - Lake Erie	Ohio State University	USA - OH	No		2019 Sex-based differences in spawning behavior account for male-biased fecundity in Lake Erie walleye (Sander vitreus)	Canadian journal of fisheries and aquatic sciences		
Bailey and Macleod	Australia - NSW	University of St. Andrews	UK	No		2014 Sociality Reduces female choice and preventing isolation in field crickets (Teleogryllus spp.)	Journal of Evolutionary Biology		
Baird, et al.	Australia	University of Central Ohio	USA	No		2012 Aggressive Transition between Alternative Male Social Tactics in a Long - Lived Australian Dragon (Physignathus lesueurii) Living at High Density	PLoS ONE		
Baird, et al.	USA - CO	Colorado State University	USA - CO	No		2012 Aggressive Transition between Alternative Male Social Tactics in a Long - Lived Australian Dragon (Physignathus lesueurii) Living at High Density	PLoS ONE		
Baker and Baker	USA - CO, ID	Colorado State University	USA	No		2005 Patterns of variation in female choice and male ejaculate expenditure in the orb-web spider Argiope bruennichi	Behavioral Ecology and Sociobiology		
Baker and Boylan	USA - WY	Colorado State University	USA - CO	No		1999 Singing behavior, mating associations and reproductive success in a population of hybridizing Lazuli and Indigo Buntings	Evolution		
Baker and McIntyre	USA	Texas Tech University	USA	Yes		2013 ASSOCIATIONS BETWEEN SIZE AND FITNESS OF ADULT FEMALES IN THE MODEL ODONATE, ENALLAGMA CYLLE (ODONATA: COENAGRIONIDAE)	The Southwestern Naturalist		
Baker and Richardson	Canada - Ontario	Brock University	Canada	No		2008 The effect of artificial light on male breeding-season behaviour in green frogs, Rana clamitans melanota	Canadian Journal of Zoology		
Baker, et al.	Canada - Nova Sco	Dalhousie University	Canada	No		2009 Sperm competition in the Atlantic Salmon (Salmo salar): parentage of offspring and sperm quality in Nova Scotia, Canada	Evolution		
Balaber, et al.	Netherlands	University of Amsterdam	Netherlands	No		2018 Sympatric speciation in Gymnomysis: no evidence for host plant fidelity	Ethologia Experimenta et Applicata		
Balaber, et al.	Netherlands	University of Amsterdam	Netherlands	No		2011 The Cost of Mating: Influences of Life History Traits and Mating Strategies on Lifespan in Two Closely Related Tylorrhanda Species	International Journal of Zoology		
Balaubanian	USA	Virginia Commonwealth	USA	No		2013 Dual Annual Spawning Races in Atlantic Sturgeon	PLoS One		
Ballarotti, et al.	Spain, Denmark, U	Departamento de Fisiolog	Spain	No		2011 Determinants of age-dependent change in a secondary sexual character	Journal of Evolutionary Biology		
Ballinger, et al.	USA - CO	Colorado State University	USA	No		2020 Reproductive Behavior and Reproductive Anatomy of Male Western Spotted Skunks (Spilogale gracilis) in Nine Southern Colorado Counties	PLoS ONE		
Ballantine, et al.	USA	University of West Georg	USA	No		2012 Divergent selection on left morphology contributes to reinforcement mating between swamp sparrow subspecies	Evolution		
Ballantine, et al.	USA - DE, MD	University of West Georg	USA	No		2013 Mechanisms of song divergence between swamp sparrow subspecies	Behavior		
Balmer, et al.	Canada	Virginia Commonwealth	USA	No		2010 Alternative reproductive tactics and lifetime reproductive success in a polygynandrous mammal	Behavior		
Barja, et al.	Spain - Galicia	Universidade Autónoma de Madrid	Spain	No		2008 Relationships Between Sex and Stress Hormone Levels in Feces and Mating Behavior in a Wild Population of Iberian Wolves (Canis lupus signatus)	Behavioral Ecology		
Barja, et al.	Spain	Universidad Autónoma de Madrid	Spain	No		2008 Relationships Between Sex and Stress Hormone Levels in Feces and Mating Behavior in a Wild Population of Iberian Wolves (Canis lupus signatus)	Behavioral Ecology		
Barnett, et al.	Canada - New Bru	University of New Brunswick	Canada	No		2010 Reproductive strategies and seasonal changes in the somatic indices of seven small-bodied fishes in Atlantic Canada in relation to study design for environmental effects monitoring	Environmental Monitoring and Assessment		
Barron and Atkin	USA - OH	Montana State University	USA - MT	No		2008 Multi-year Reproduction in Ellipsoiana Ibericoides in South-central Ohio	The American Midland Naturalist		
Barry	Australia (Kuringai	Macquarie University	Australia	Yes		2015 Sexual deception in a cannibalistic mating system? Testing the Femme Fatale hypothesis	Proceedings of the Royal Society B: Biological Sciences	Insect	
Barry and Hilder	Sydney	Macquarie University	Australia	No		2013 Maracuthulent intake affects reproduction of a predatory insect	Oikos		
Bartel	USA - MN	Minnesota Department of	USA - MN	No		2011 Population Genetic Structure of Lake Sturgeon (Acipenser Fulvescens), Genus Gastrosteus	Ecology		
Baster, et al.	Texas, USA (Orne	Texas Tech University	Texas, USA	No		2020 A MOLECULAR EXAMINATION OF RELATEDNESS, MULTIPLE PATERNITY, AND COHABITATION OF THE SOUTHERN PLAINS WOODRAT (NEOTOMA MICROPUS)	Journal of Mammalogy		
Beani and Turillazzi	Italy	University of Florence	Italy	No		1988 Alternative mating tactics in males of Polistes dominulus (Hymenoptera: Vespidae)	Behavioral Ecology and Sociobiology		
Beani and Zaccarone	Italy	Università degli Studi di Firen	Italy	No		2010 Experimental male size manipulation in Polistes dominulus paper wasps: being the right size	Ethology Ecology & Evolution		
Beat and Heinz-Ulrich	Switzerland	University of Zurich	Switzerland	No		2001 Choosy females and indiscriminate males: male choice in mixed populations of wood ant hybridogenetic water frogs (Rana lessonae, Rana esculenta)	Behavioral Ecology		
Beck, et al.	Argentina - neje	Universidad Nacional de Mar	Argentina	No		2020 Reproductive Behavior and Reproductive Anatomy of Male Western Spotted Skunks (Spilogale gracilis)	PLoS ONE		
Becker, et al.	San Marcos, TX	Texas State University	USA	No		2012 Body Size-Dependent Male Sexual Behavior in a Natural Population of Gambusia Affinis (Poeciliidae)	The American Midland Naturalist		
Beckers and Wagner	USA - CA	University of Nebraska	USA	No		2018 Males and females evolve molar traits in populations with sweetdripping parabiotic	Behavioral Ecology and Sociobiology		
Beeler, et al.	USA - NC	Duke University	USA	No		2010 Reproductive Ecology of the Green Frog (Rana Clamitans) in Southeastern North Carolina: alternative calling tactics conditional on both intrinsic and extrinsic factors	Herpetologica		
Beese, et al.	Switzerland	University of Basel	Switzerland	Yes		2006 Conversion of male and female reproductive tactics in a socially feminized hermaphroditic leaf snail	Ethology	Mollusk	
Bell-Venner and Venner	Sweden	Lund University	Sweden	No		2010 Male guarding: strategies and mate competition activity in overwintering spider: results from a field study	Behavioral Ecology and Sociobiology		
Bel'skii and Bazut	Russia	Russian Academy of Sci-Russia		No		2012 Estimates of energy expenditures for reproduction in the pied flycatcher Ficedula hypoleuca Pall.: in an industrially polluted environment	Russian Journal of Ecology		
Bellemain, et al.	Multiple: Sweden, N	Norwegian University of Norway		No		2006 Mating Strategies in Relation to Sexually Selected Infanticide in a Non-Social Carnivore: the Brown Bear	Ethology		
Benard, et al.	USA - Ohio, Cleve	Cleveland Museum of Natural	USA - OH	No		2010 Life History Consequences of Male Mating Effort in Female Western Gray Tree Frogs	Ecology and Evolution		
Benar, et al.	USA - CA - Santa Cr	University of Michigan	USA - MI	No		2007 Predators and Mates: Conflicting Selection on the Size of Male Pacific Treefrogs (Pseudacris regilla)	Journal of Herpetology		
Benchiani, et al.	Algeria (El Kala Nr	Badji Mokhtar University	Algeria	No		2020 BIOECOLOGY OF CALOPTERYX HAEMORRHOIDALIS (ZYGOPTERA, ODONATA) IN RESPONSE TO ENVIRONMENTAL FACTORS IN THE BRAFTA SECTOR STREAMS, EL-KALA, ALGERIA: IMPLICATIONS FOR ECOHYDROLOGICAL BIOMONITORING	Studia Universitatis Vasile Goldis Seria Stiintele Vietii (Life Sciences Series)		
Benedict	USA	University of California	USA	No		2010 California bushes vocal duets are multi-functional signals for multiple receivers	Behavior		
Benelli	Italy	University of Pisa	Italy	No		2014 Aggressive Behavior and Territoriality in the Olive Fruit Fly Bactrocera oleae (Rossi) (Diptera: Tephritidae): Role of Residence and Time of Day	Journal of Insect Behavior		
Benelli, et al.	Italy - Tuscany	University of Pisa	Italy	No		2011 Male-male courtship in a Mediterranean fruit fly pest Ceratitis capitata (Wiedemann) (Diptera: Tephritidae)	Behavioral Ecology		
Benelli, et al.	Italy - Pisa	University of Pisa	Italy	No		2013 Population-level intersexual aggressive and courtship displays make better fighters not lovers: evidence from a fly	Behavioral Processes		
Benelaou, et al.	Canada - Ontario	University of Windsor	Canada	No		2009 The effects of river barriers and range expansion of the population genetic structure and stability in Greenside Darter (Etheostoma blennioides) populations	Conservation Genetics		
Bentley, et al.	Australia	University of New South	Australia	No		2002 Complex Multivariate Sexual Selection on Male Acoustic Signaling in a Wild Population of Teleogryllus commodus	American Naturalist		
Berdan and Kennedy	USA - MN, VA	Minnesota DNR	USA - MN	No		2013 Unusual Courtship Behaviors by Male American Woodcock	Southeastern Naturalist		
Berglund, et al.	Sweden	Swedish University of Agri	Sweden	No		2010 Sexual selection and mate choice in emerging models of anadromy and old-colny salmon (Oncorhynchus kisutch)	Evolutionary Ecology		
Bernet, et al.	Switzerland - Lake	University of Basel	Switzerland	No		2017 Sexual isolation promotes divergence between parapatric lake and stream stickleback	Ecology		
Bertin and Cucchy	France - Burgundy	Université de Bourgogne-F	France	No		2003 Sexual selection, antennae length and the mating advantage of large males in Aedes aegypticus	Behavioral Ecology		
Bertram, et al.	Canada - Trent Ont	Trent University	Canada	No		1996 Male mating success and variation in chorus attendance within and among breeding seasons in the gray treefrog (Hyla versicolor)	Copeia		
Bertran and Margalida	Spain	Grupo de Estudios y Protec	Spain	No		1999 Copulatory behavior of the Bearded Vulture	The Condor		
Bessey, et al.	USA - CA	University of Nevada	USA	No		2016 Sex-Specific Survival and Sex-Biased Acute Avian Kidney Injury Impact Reproductive Groups: The Case of Bearded Vulture (Gypaetus barbatus Polyandrous Trios	The Condor	Bird	
Bichet, et al.	France - Alps	Université de Lyon	France	No		2016 Faithful or not: direct and indirect effects of climate on male pair patterns in a population of Alpine marmots	Proceedings of the Royal Society B: Biological Sciences		
Bieman and Hiller	USA - MI, MN	Behavior and Basic Biolo	USA	No		1980 Mating behavior of Malacosoma disstria at two levels of male competition	Florida Entomologist		
Bilman, et al.	USA - HI	Brigham Young University	USA - UT	No		2014 Prior experience affects alloceation to current reproduction in a burying beetle	Behavioral Ecology		
Binder, et al.	USA - Lake Huron	Michigan State University	USA	No		2010 New insight into the spawning behavior of lake trout, Salvelinus namaycush, from a recovering population in the Laurentian Great Lakes	Environmental Biology of Fishes		
Birkhead and Biggins	Sheffield, UK	University of Sheffield	UK	No		1987 Male Quality and Female Choice in the Zebra Finch Poephila Guttata Guttata (Aves: Estrildidae)	Behavioral Ecology and Sociobiology		
Birtuk, et al.	Ukraine	Kharkiv National Univers	Ukraine	No		2016 Gamete production patterns and mating systems in water frogs of the Pelophylax(=Rana) esculenta complex in north-eastern Ukraine	Journal of Zoological Systematics & Evolutionary Research		
Biscaia and Marin	USA (southern old	Università di Padova	Italy	Yes		1996 Sexual selection and sexual size dimorphism in the eastern mosquitofish Gambusia holbrooki (Pisces Poeciliidae)	Ethology Ecology & Evolution	Fish	
Bishop	UK - Shropshire	Batchers College	UK - Shropshire	No		2001 Social structure, habitat use and breeding biology of hedgerow Dormouse Prunella modularis	Bird Study		
Blackburn and Maddison	USA - CA	University of BC	Canada	No		2014 Stark sexual display divergence among jumping spider populations in the face of gene flow	Molecular Ecology		
Blais, et al.	Canada - Quebec	Université du Québec à Ch	Canada - Quebec	No		2007 Sex-Specific Adult Mortality in Relation to Alternative Reproductive Tactics in Male Snowshoe Hares	Oikos		
Blakesley, et al.	USA	Bird Conservancy of the FLO	USA	No		2006 BREEDING DISPERSAL IN THE CALIFORNIA SPOTTED OWL	Ecology		
Blanchfiel, et al.	Canada	Ontario Ministry of Natur	Canada	No		2003 Breeding success of male brook trout (Salvelinus fontinalis) in the wild	Behavioral Ecology		
Blanchfield and Ridgway	Canada - Ontario	York University/Huntsmen	Canada	No		1999 The cost of peripheral males in a brook trout mating system	Animal Behaviour		
Blanchong, et al.	USA	Bowling Green State Univ	USA	No		1990 Chiral in phidot spiders revealed	Journal of Arachnology		
Blanco-Aguiar, et al.	Switzerland	Swiss Ornithological Institute	Switzerland	No		2008 Sexual selection and the evolution of morphological traits and fluctuating asymmetry in the black scavenger fly Sepsis cynipsea	Journal of Evolutionary Biology		
Blanco and Martínez	Spain - Segovia Pr	Universidade Aldar de H	Spain	No		1996 Sex difference in breeding age of griffon vultures (Gyps fulvus)	Ack		
Blandine	Gotland, Sweden	University of Lyon	France	No		2009 Variability of dispersal propensity in a patchy population	Proceedings of the Royal Society B: Biological Sciences		
Blunk, et al.	Kazakhstan	Kazakh Academy of Sciver	Kazakhstan	No		2012 Influence of population density on group sizes in gotland gazelle (Gazella subgutturosa Guld., 1780)	European Journal of Wildlife Research		
Blaustein, et al.	USA	Binghamton University	USA	No		2001 Amphibian Breeding and Climate Change	Conservation Biology		
Blier, et al.	Canada	Université du Québec à	Canada	No		2006 Reproductive Ecology of Lake Whitefish in Lake Simcoe, Ontario	Transactions of the Royal Society B: Biological Sciences		
Blieker, et al.	Germany/Netherla	University of Agder	Norway	No		2017 Evidence for ontogenetically and morphologically distinct alternative reproductive tactics in the massive Round Goby Neogobius melanostomus	PLoS One	Fish	
Bloszyk, et al.	Poland	Adam Mickiewicz Univer	Poland	No		2004 Parthenogenesis as a life strategy among mites of the subordr Uropodina (Acari: Mesostigmata)	Canadian Journal of Zoology		
Boal	USA - AZ	University of Arizona	USA - AZ	No		2001 NONRANDOM MATING AND PRODUCTIVITY OF ADULT AND SUBADULT COOPER'S HAWKS	The Condor		
Bocci, et al.	Italy	University of Siena	Italy	No		2010 Even mortality patterns of the two sexes in a polygynous, new-monomorphic species: is there a Red?	Journal of Zoology		
Boggs, et al.	USA	University of Chicago	USA	No		1981 Butterfly Reproductive Strategies: Adult Resource Allocation	Ecological Processes		
Boggs	USA - Kirby Camp	Stanford University	USA	No		1997 Dynamics of reproductive allocation from juvenile and adult feeding: nutrient stoichiometry	Ecology		
Bohn, et al.	USA - TX	Texas A&M Univ.	USA	No		2009 Versatility and Stereotypy of Free-Tailed Bat Songs	PLoS One		
Bollmann and Hans-Ulric	Switzerland - Eaw	University of Zurich	Switzerland	No		2001 Reproductive success of water pipits in an alpine environment	The Condor		
Bolnick, et al.	Canada	University of Texas at Au	USA	No		2010 Female stickleback prefer shallow males: Sexual selection on sexi microhabitat	Evolution		
Bonadonna and Nicolas	Spain - Balearic Is	Universitat de les Illes Ba	Spain	No		2003 Chemosensory mate choice in Cory's shearwater (Calonectris diomedea diomedea)	Ethology Ecology and Sociobiology		
Bond, et al.	USA - OR	Oregon State University	USA	No		2003 Recruitment over value in gray-tailed vole (Microtus canicaudus) in response to density, sex ratio, and season	Canadian Journal of Zoology		
Bondarunky	Canada - Ontario	University of Toronto	Canada	No		2003 Layered sexual selection: a comparative analysis of sexual behaviour within an assemblage of polytrid flies	Canadian Journal of Zoology/Revue Canadienne de Zoologie		
Bondarunky and Brandl	Canada - Ontario	University of Toronto	Canada	No		2012 Aging in sexual and obligately asexual clones of Daphnia from temporary ponds	Journal of Evolutionary Biology		
Bonizzoni, et al.	Greece - Chios	University of Pavia	Italy	No		2002 Microsatellite analysis reveals remating by wild Medfly females in Greece	Molecular Ecology		
Bonn, et al.	South Africa - Cape	Stellenbosch University	South Africa	No		2009 Sex-specific dispersal patterns in a cooperatively breeding vertebrate	Proceedings of the Royal Society B: Biological Sciences		
Bonsegna and Jones	Italy	University of Melbourne	Australia	No		2010 Aggregation and mating success of Ceratrichia tenebrionis (Coleoptera: Bupresidae)	Insect Science		
Boomsma and Van Der H	Netherlands, UK	University of Aarhus	Denmark	No		1998 Queen mating and paternity variation in the ant Lasius niger	Molecular Ecology		
Borges, et al.	Portugal - Azores	University of the Azores	Portugal	No		2011 Prey availability in time and space is a driving force in the history evolution of predatory insects	Evolutionary Ecology		
Borkowska	Poland	University of Białystok	Poland	No		2011 Seasonal variation of reproductive success under female philopatry and male-biased dispersal in a common vole population	Behavioural Processes		
Borkowska and Ruffaldi	Poland - Podlasie	University of Białystok	Poland	No		2013 Reproductive success of male Common Voles (Microtus arvalis) in relation to relative population of the common vole	Ethology		
Borkowska, et al.	Poland	University of Białystok	Poland	No		2008 Multiple paternity in free-living root voles (Microtus oeconomus)	Behavioural Processes		
Borowski, et al.	Poland - Białowie	Forest Research Institute	Poland	No		2014 Relationships between dominance, testosterone level and scent marking of males in a free-living root vole (Microtus oeconomus) population	Phaiologia & Behavior		

Author	Study Location	Lead Author Affiliation	Lead Author Location	Conflict (Y/N?)	Year	Title	Journal	Species	Notes
Bosch, et al.	Spain	Museo Nacional de Ciencias	Spain	No		2003 Behavioural patterns, preference, and motivation of female midwife toads during phonotaxis tests	Journal of Ethology		
Bots, et al.	Canada	University of Antwerp	Belgium	Yes		2013 Frequency-Dependent Selection on Female Morphs Driven by Promating Interactions with Males	American Naturalist	Insect	
Botto and Castellano	Italy - piedmont	University of Turin	Italy	No		2016 Attendance, but not performance, predicts good genes in a lek-breeding frog	Behavioral Ecology		
Bourke, et al.	Canada - Ontario	University of Guelph	Canada	No		2000 Sperm competition and the evolution of spermatophore transfer: a cost of mating? (Lepidoptera)	Behavioral Ecology		
Bourret and Garant	Canada	Fisheries and Oceans Cana	Canada	No		2010 Candidate gene-environment interactions and their relationships with fitnes of breeding (a wild bird population	Ecology and Evolution		
Bousset, et al.	France	Centre d'Ecologie Forest	France	No		2004 Population biology of the invasive freshwater snail Physa acuta approached through genetic markers, ecological characterization and demography	Molecular Ecology		
Bouvier, et al.	France	Ecologie des Invertébrés	France	No		2005 EFFECTS OF APPLE ORCHARD MANAGEMENT STRATEGIES ON THE GREAT TIT (PARUS MAJOR) IN SOUTHEASTERN FRANCE	Environmental Toxicology and Chemistry		
Bradbury, et al.	UK	Edward Grey Institute of UK	UK	No		2000 Habitat associations and breeding success of yellowhammers on lowland farmland	Journal of Applied Ecology		
Brady, et al.	USA - CO	Colorado State University	USA	No		2011 Sex-biased dispersal and spatial genetic structure in a monogamous vertebrate: Windy Ridge bighorn sheep have weak kinships, f/m-biab rarilocus orthogonalter	Ecology and Evolutionary Biology		
Brandner, et al.	Germany	Technical University Mun	Germany	No		2012 Bugger is Better: Characteristics of Round Gobies Female Forming an Invasion Front in the Danube River	PLoS One		
Brandt, et al.	USA - AZ	University of California -	USA - CA	No		2016 Temperature alters multimodal signaling and mating success in an earbrown	Behavioral Ecology and Sociobiology		
Bradford, et al.	Canada - New Bru	University of New Brunsw	Canada	No		2013 Seasonal patterns of gonad size, liver size, and in situ gonadal steroidogenic capacity in stony sculpin (Cottus cognatus)	Water Quality Research Journal of Canada		
Brasch, et al.	Gibraltar	German Primate Center	Germany	No		2007 Female sexual behavior and sexual swelling size as potential cues for mates to discern the female fertile phase in free-ranging Barbary macaques (Macaca sylvanus) of Gibraltar	Hormones & Behavior		
Brash, et al.	USA - CA	University of California -	USA	No		2020 Reproductive Behavior and Reproductive Anatomy of Male Western Spotted Skunks (Spilogale gracilis)	PLoS ONE		
Breedveld and Fitze	Roosendaal, Spa	Universidad de Zaragoza	Netherlands	No		2012 A matter of time: delayed male encounter postpones mating, window limitation and reduces the strength of female choosiness	Behavioral Ecology and Sociobiology		
Breisinger, et al.	Central Florida	WA-300 Kennedy Space	USA - Florida,	No		2010 A Model-Selection Approach to Predicting Whether Florida Scrub-Jays Delay Breeding	Condor		
Brekke, et al.	New Zealand	Massey University	New Zealand	No		2011 Sex-biased parasitism in a polygynous bird: female Brown Teal (Anas chlorotis) suffer more than do their polygynous mates	Behavioral Ecology	Birds	
Bremner and Tregenza	Spain	Universidad de Leon/Exeter	UK	No		2005 Mounting polygyny in wild populations: a case study using promiscuous crickets	Molecular Ecology	Insect	
Brett, et al.	Spain	Universidad de Cantabria	Spain	No		2011 Sex-specific reproductive investment in response to food availability in the Iberian Emerald lizard, Lacerta caudata	Journal of Zoology		
Bridges, et al.	USA - WV	Institute for Wildlife Studies,USA - CA		No		2010 Reproductive Ecology of American Black Bears in the Allegheny Mountains of Virginia, USA	Journal of Wildlife Management		
Britton and Ballantine	USA INC	Western Carolina Univer	USA	No		2020 Floristic responses to algae specific offspring threats	Ecology and Evolution		
Brodie and Brodie	USA	Indiana University	USA	No		1990 Total Phenotypic Correlation, Genetic Correlation, Selection Intensities and phylogenetic relationship between Cyprinodon variegatus variegatus and Cyprinodon variegatus hubbsi (Cyprin

This is the author's accepted manuscript without copyediting, formatting, or final corrections. It will be published in its final form in an upcoming issue of The American Naturalist, published by The University of Chicago Press. Delivery date to JCR when issue is in spring.
https://doi.org/10.1086/725717. Copyright 2021 The University of Chicago.

Jayasena, et al.	USA - FL	University of Florida	USA	No	2011	Endocrine disruption in white-bass (Eudiscomus albus) caused by exposure to environmentally relevant levels of methylmercury	Aquatic Toxicology
Jeanes and Rowland	USA - NY	Indiana University	USA - IN	No	2002	STIMULUS SPECIFIC AND RESPONSE SPECIFIC HABITUATION IN COURTING STICKLEBACK DEVELOPMENTAL AND FUNCTIONAL CONSIDERATIONS	Behaviour
Jennings, et al.	USA - GA	University of Georgia	USA	No	2010	Fine sediment affects on survival to emergence of robust redhorse	Environmental Biology of Fishes
Jennings, et al.	Canada, Colorado,	University of Alberta	CAN	No	2004	Cuticular hydrocarbons of Drosophila virilis: phylogenetic variation, sexual dimorphism and potential roles as pheromones	Journal of Insect Physiology
Jennions, et al.	Australia - Canberra	Australian National Unive	Australia	No	2004	NO EVIDENCE FOR MASSED AVOIDANCE THROUGH POSTEJACULATORY MECHANISMS IN THE BLACK FIELD CRICKET, TELEOGRYLLUS COMMODUS	Evolution
Jennions, et al.	USA - NY	Cornell University	USA	No	2000	MATE CHOICE, MATE MONITORING, AND MATE GUARDING IN ARTHROPODS AND VERTEBRATES: A TEST OF ASSUMPTIONS	Ethologia
Jeupa, et al.	USA - California	University of California -	USA	No	2010	Differential gene expression in relation to mating system in Peromyscus maniculatus	Ecology and Evolution
Jolly, et al.	Argentina	Wildlife Technology Cent	UK	No	2005	Breeding behaviour and reproduction in the Pampas de Achala toad, Bufo achalensis	Amphibia-Reptilia
Jones, et al.	USA - NY	Cornell University	USA	No	2000	Sperm competition in the Japanese quail: recent work on the role of the oviduct	Philosophical Trans Royal Soc(ely B) Biological Sciences
Johnson, et al.	USA - Iln	Tulane University	USA	No	2002	Increased cuticle as a cost of breeding late for male house wrens (Troglodytes aedon)	Behavioral Ecology
Johnson, et al.	USA	University of Nevada	USA	No	2003	DIURNAL AND NOCTURNAL BEHAVIOR OF BREEDING AMERICAN AVOCETS A JOURNAL OF ORNITHOLOGY	The Wilson Bulletin
Johnson, et al.	USA - GA	Georgia Institute of Technol	USA - GA	No	2009	Resource allocation in a social wasp: effects of breeding system and life cycle on reproductive decisions	Molecular Ecology
Johnson, et al.	Scotland	University of Glasgow	UK	No	2010	Bipacian paternity analysis and mating patterns in a parasitic nematode, Trichostrongylus tenuis	Heredity
Johnson, et al.	Australia - Victoria	University of Melbourne	Australia	No	2007	Male mate choice and genital morphology in a seed beetle: implications for genital evolution	Evolution
Jones and Elgar	Australia - Victoria	University of Melbourne	Australia	No	2008	Male mastrubation decisions and sperm quality influence paternity in the golden orb-weaving spider	Behavioral Ecology
Jones, et al.	USA - OR	Texas A&M	USA	No	2004	Molecular Parentage Analysis in Experimental Newt Populations: The Response of Mating System Measures to Variation in the Operational Sex Ratio	American Naturalist
Jones, et al.	Scotland	University of Edinburgh	UK	No	2006	Lack of association mating between incipient species of stickleback from a hybrid zone	Behavior
Jones, et al.	USA - MT	U.S. Fish and Wildlife Service	USA - CO	No	2010	REPRODUCTIVE BIOLOGY OF A GRASSLAND SONGBIRD COMMUNITY IN NORTHCENTRAL MONTANA	Wilson Journal of Ornithology
Jones	Australia - Victoria	Deakin University	Australia	No	2000	Female preference for male courtship displays in the Australian gilbert's dragon	Ethology
Jude and Olsen	Australia - Sydney	University of Sydney	Australia	No	2007	Sexual cannibalism and sperm competition in the golden orb-web spider Nephila plumipes (Araneoidae): female and male perspectives	Behavioral Ecology
Jutfa, et al.	Australia - Gosford	University of Hamburg	Germany	No	2008	Male copulation frequency, sperm competition and genital damage in the golden orb-web spider (Nephila plumipes)	Australian Journal of Zoology
Kadasa and Byrtejstad	Norway	Norwegian Institute for N	Norway	No	1994	Breeding chronology and mating system of the Eurasian dotterel (Charadrius morinellus L.)	Ark
Kahlala and Dingle	USA - CA	University of Stockholm	Sweden	No	1993	Wing dimorphism, territoriality and mating frequency of the waterstrider Aquarius remigis (Say)	Annales Zoologici Fennici
Kalb, et al.	USA - IL	Illinois Natural History Sur	USA	No	1999	Mate choice in the monogamous cichlid, Neolamprologus pulcher: evidence for direct benefits	Ethology
Kano, et al.	Japan - Mill pelle	Mie University	Japan	No	2010	Male-dependent female mating in cockroaches and spotted mole crickets	Journal of Ethology
Kant, et al.	New Zealand	Massey University	New Zealand	No	2012	Mating or ovipositing? A crucial decision in the life history of the cabbage aphid parasitoid Diaeretiella rapae (M'Intosh)	Ecological Entomology
Karin	USA - AZ	University of North Carol	USA	No	2000	Females copulated beats compromise on mate quality to ensure conspecific matings	Behavioral Ecology
Kast, et al.	USA - VA	Cornell Lab Ornithol	USA	No	1998	Variation in ejaculate quality in dark-eyed junco according to season, stage of reproduction, and testosterone treatment	The Auk
Kawamoto and Andrade	Brazil - Sao	Universidade Estadual Paul	Brazil	No	2009	Reproductive biology of Cyrtopodium polyphyllum (Vellozo) Pabst (Orchidaceae) Neotropical species- and population-specific responses	Botanical Journal of the Linnean Society
Kaletchits, et al.	USA - AL	Auburn University	USA - AL	No	2007	Population Demographics of Hinkle's bogious (Minimus) in the Lower Tallapoosa River	Southeastern Naturalist
Kahala, M.	France and Spain	University of Stockholm	Sweden	No	2003	Conspecifics enhance egg production in an egg carrying bug	Behavioral Ecology
Kaufo, et al.	Slovakia	Slovak Academy of Scienc	Slovakia	No	2015	Environmentally driven variability in size-selective females' mating frequency of bush-cricket Pholidoptera griseoaptera	Insect
Kazama, et al.	Japan	Hokkaido University	Japan	No	2012	Consistent individual variations in aggressiveness and a behavioral syndrome across breeding contexts in different environments in the Black-tailed Gull	Journal of Ethology
Kearse, et al.	USA - NC	Duke University Marine Lab	USA	No	2012	Geneious Basic: an integrated and extendable desktop software platform for organizing and analyzing sequence data	Bioinformatics (Oxford) Advance Access publication
Keese, et al.	Israel	The Hebrew University of J	Israel	No	2010	Red swimming gull flowers as floral pieces for mating and feeding by lesser gladiger beetles	Biological Journal of the Linnean Society
Kelly	New Zealand	University of Canterbury	New Zealand	No	2005	Allometry and sexual selection of male weaponry in Wellington tree weta, Hemideina crassidens	Behavioral Ecology
Kelly	New Zealand	Australian National Unive	Australia	No	2006	Identifying a causal agent of sexual selection on weaponry in an insect	Behavioral Ecology
Kelly	New Zealand	University of Toronto - Mi	Canada	No	2008	Sperm investment in relation to weapon size in a male triangtic insect?	Behavioral Ecology
Kelly and McLain	USA - MT	Montana State University	USA	No	2009	Mating success and fitness consequences of alternative male reproductive phenotypes	Behavioral Ecology
Kemp	Australia	Macquarie University	Australia	No	2002	Costly copulation in the wild: mating increases the risk of parasitoid-mediated death in swarming locusts	Evolution
Khelifa, et al.	Algeria - Guelma	University of Tizi Ouzou	Algeria	No	2016	Reproductive behaviour of a North African endemic damselfly, Platycnemis subdilatata (Odonata: Platycnemididae) and probable senescence effects	Aquacultura, Aquaculture, Conservation & Legislation
Khelifi, et al.	Algeria - Algiers	Mohamed Chérif Messaoui	Algeria	No	2010	Reproductive biology of Caraiscus cernuus (Cyprinidae) in Beni Haroun Dam, Algeria	Bulletin of Entomological Research
Kight, et al.	USA - Northfield	Montclair State University	USA - NJ	No	2010	Recent changes in reproductive phenology of a fir-selected aquatic insect predator, Sialodattina furlongiana (= Say) (Heteroptera, Belostomatidae)	Journal of Insect Conservation
Kim, et al.	USA - IL	Illinois Natural History Sur	USA	No	2010	Reproductive biology of the Ozark hellbender, Cryptobranchus alleganiensis bishopi (Cryptobranchidae)	Herpetologica (Herpetologica)
Kim, et al.	South Korea	Kangwon National Univer	South Korea	No	2007	Mating behavior of the Mongolian racerunner (Eremias argus - Lacertidae, Reptilia)	Animal Cells & Systems
Kim, et al.	USA	Colorado State university	USA	No	2000	Diverse reproductive patterns of Bluehead Chub (Nocomis leptocephalus) and their relationships with nest size and interactions with an associate, Yellowfin Shiner (Notropis lutipinnis)	Environmental Biology of Fishes
Kinnett, et al.	USA - VA	Indiana University	USA	No	2016	Male courtship preference during seasonal sympatry may maintain population divergence	Ecology and Evolution
Kinnett, et al.	USA - VA	Indiana University	USA	No	2020	Migrant and resident female sunspotts differ in gonadal response to upstream stimulation during seasonal sympatry	General & Comparative Endocrinology
Kirkpatrick, et al.	USA - TX	Texas A&M University	USA	No	1990	Sexual selection and the evolution of female choice	Journal of Heredity
Kirsty, et al.	New Zealand	Indiana University	USA	No	2010	Convolutaxing mutagens and cadgeals for host-sex and parasite local adaptation in a snail-trematode interaction	Oikos
King, et al.	New Zealand	Indiana University	USA	No	2011	PARASITES, SEX, AND CLONAL DIVERSITY IN NATURAL SNAIL POPULATIONS	Evolution
Kirillova and Kirillova	Russia	Institute of Ecology of the Russia	Yes	No	2013	Analysis of the reproductive structures of the hemipopulation of the Coniosaxxa ornatin (= Chujardin, 1965) (Hemiptera: Coniosaxxidae) in marsh frogs of different ages	Vestnik Tomskogo Gosudarstvennogo Universiteta. Biologiya
Kirkendall	Norway - SE	University of Oslo	Norway	No	1998	Sperm is a limiting resource in the pseudogynous bark beetle (ips acuminatus) (Scolytidae)	Ethology
Kirkpatrick and Ravenscroft	USA - TX	Texas A&M University	USA	No	2002	Chorus attractiveness and acoustic mate choice in barking treefrogs (Hyla gratiosa)	Behavioral Ecology and Sociobiology
Klappert, et al.	Multiple: Canada,	Swiss Federal Institute fo	Switzerland	No	2007	WALE COURTSHIP SONG AND FEMALE PREFERENCE VARIATION BETWEEN PHYLOGEOGRAPHICALLY DISTINCT POPULATIONS OF DROSOPHILA MONTANA	Evolution
Klaus and Lougheed	Canada	Queens University	Canada	No	2013	Changes in breeding phenology of eastern Ontario frogs over four decades	Ecology and Evolution
Klenova, et al.	Russia	Lomonosov Moscow State Ruscia	Russia	No	2006	Gnat structure provides information about pair identity in the red-crowned crane (Grus japonensis)	Journal of Ethology
Klips and Kearney	USA	Ohio State University at N	USA	No	2010	Aggregation, Oviposition and Emergence of Holocuse Seed Beetles (Arthaxa Nitida) at a Central Ohio Marsh	The American Midland Naturalist
Knell	Canada - Genesee	Cornell University	USA	No	2009	Male and female mate choice in a polymorphic butterfly: alternative reproductive tactics	Proc Royal Soc(ety) B Biological Sciences
Knott and Sauer	Germany	Univ. Bonn	Germany	No	2008	Mating Systems of the Tree-Kicking Bark Beetle Polygraphus polonicus (Coleoptera: Curculionidae: Scolytinae)	Journal of Insect Science
Koch and Sauer	Germany	Univ. Bonn	Germany	No	2008	Female mating frequency in a wild population of scorpionflies (Panorpa germanica, Panorpidae, Mecoptera)	Journal of Zoological Systematics & Evolutionary Research
Kojima, et al.	Japan	University of Tokyo	Japan	No	2009	Female Barn Swallows Gain Indirect but not Direct Benefits through Social Mate Choice	Ethology
Kokkari, et al.	Greece	Aristotle Univ. Thessalon	Greece	No	2017	Effect of fruit volatiles and light intensity on the reproduction of Bactrocera (Dacus) oleae	Journal of applied entomology
Kokko and Ots	Finland	University of Helsinki	Finland	No	2006	When to leave the nest? The consequences of a late hatch for avian broods	Behavioral Ecology
Konecny, et al.	Czech Republic	Academy of Sciences of Czech republic	Czech Republic	No	2010	Population and individual consequences of breeding resource availability in the European bitterling (Rhodeus amarus)	Behavioral Ecology and Sociobiology
Korber	USA - OR, CA	Museum of Natural Hist	Luxembourg	No	2011	INTERBREEDING OF AECHMOPHORUS GREBES	Wilson Journal of Ornithology
Koprowski	USA	University of Arizona	USA	Yes	2005	ANNUAL CYCLES IN BODY MASS AND REPRODUCTION OF ENDANGERED MT. GRAHAM RED SQUIRRELS	Journal of Mammalogy
Kowek, et al.	Japan	Hokkaido University	Japan	No	2002	Does the refuge availability influence the spawning behavior of mature males pair in salmonids? A test in the Miyabe charr	Environmental Biology of Fishes
Kowalczyk and Chamen	Poland	Institute of Ecology of Poland	Poland	No	2011	Reproductive ecology of the Eurasian Pygmy Owl Glaucidium passerinum in a spatially fluctuating predation risk	Journal of Ornithology
Kowes, et al.	USA - GA	Georgia Institute of Technol	USA	No	2008	Nests Without Eggs: Abandonment Or Cryptic Predation?	Ethology
Krajacic, et al.	Argentina	Universidad Nacional de Argentina		No	2010	Broad-sort size of Apis mellifera mediates the reproductive behavior of Varroa destructor	Selección Sexual y el Sistema de Apareamiento Genético de Melaeg-to gallopavo.
Krayer and Montgomery	USA - NY	Cornell University	USA	No	2000	Novel Wing-Flashing Behavior in a Dragonfly: Perissa deitrici Maybe Competitive	Urica
Krehbiel, et al.	Algeria	Badji Mokhtar University	Algeria	No	2014	Aspects of reproductive biology and ecology of Calcaginion mercuriale at its southern range margin	Ethology
Krell, et al.	Germany - Berlin	Humboldt University	Germany	No	2000	Male-male competition in a dung beetle: no evidence for a fighting morph in Onthophagus taurus and not associated with parental relatedness or social mating system	International Journal of Insect Morphology
Krijger and Balmer	Canada - Nova Sco	Saint Mary's University	Canada	No	2004	Eat-your-paternity-in-first and second-brood-of-eastern-bluing Sparrow	Bird
Krakowski and Schaus	USA (Texas)	University of Oklahoma	USA	Yes	2013	The direct costs of being in a sexually harassing environment	Journal of Field Ornithology
Krakauer, et al.	France	University of Sabatier, Toll	France	No	2005	Assortative Mating in Sympatric Hunt Forms of the European Corn Borer	Animal Behavior
Krall, et al.	USA - TX	Eastern New Mexico Univ	USA	No	2016	Small Scale High Resolution Temporal Activity of Trachemys scripta elegans, Home Ranges, Home Intensity, and Immediate Movement Responses Following Harvest Events	Science
Krebs and Kuzmiak	Canada - Ontario	Trent University Peterbo	Canada	No	1994	Nest-site selection by Eastern Bluebirds: preferences for cavity entrances with emphasis on patterns of predation, timing of nestlings, and nesting	Copeia
Krieger and Ganzhorn	Germany	Universität Hamburg	Germany	No	2010	Dwarfness and Sociality in Mammals: Ecological Factors Underlying Dwarfness in Sociality	Ethology
Kriesell, et al.	USA	Virginia Tech	USA	No	2008	Do stress hormones suppress helper reproduction in the cooperatively breeding red-cockaded woodpecker (Picoides borealis)?	Hormones and Behavior
Kristofer, et al.	Multiple: Greece,	Aristotle University	Greece	No	2010	Mosquitoes/mosquito in Artemia be attributed to Wolbachia?	Hydrobiologia
Krooney, et al.	Canada	University of Saskatchewa	Canada	No	2010	Mate choice and fitness across duetting Australian Magpies: Pair-female in a large mammal	Journal of Animal Ecology
Manns and Dobson	Canada - Alberta	Prescott College	USA	No	2008	Microsa Male Cicumber Ground Squirrels Tamias Sibiricus	Ethology
Manning, et al.	USA - Alaska	University of Alaska Fairb	USA	No	2008	Ecology and Behavior of Beavers in Relation to Coyote Predation	Journal of Mammalogy
Marini and Pasotto	Italy -	Università di padova	Italy	No	1994	Communal breeding starlings, Gilla gilla, are close kin	Animal Behavior
Markow and Ricker	USA - AZ	Arizona State University	USA	No	1992	Male size, developmental stability, and mating success in natural populations of three Drosophila species	Heredity
Marlin, et al.	USA - MT	University of Montana	USA	No	1973	Nest-site selection by the Lesser Prairie-Chicken and Sharp-tailed Grouse	The Wilson Bulletin
Marshall	USA - AZ	University of New Mexico	USA	No	1992	Male courtship persistence in Cotesia plutellae and C. acrophaeae (Lepidoptera: Pieridae)	Journal of the Kansas Entomological Society
Marshall and Stevens	Greece	Univ. Cambridge	England	No	2014	Wall lizards display conspicuous signals to conspecifics and reduce detection by avian predators	Behavioral Ecology
Martin and Martin	Australia - Victoria	University of Melbourne	Australia	No	2007	Resource distribution influences mating system in the tobacco (Trichosurus cunninghami: Marsupialia)	Oecologia
Martin-Vivaldi, et al.	Spain	Estación Experimental de Spain		No	2004	Strophe Length in Spontaneous Songs Predicts Male Response to Playback in the Hoopoe Upupa epops	Ethology
Martin, et al.	Spain	Museo Nacional de Ciencias	Spain	No	2010	Reproductive Ecology and Female Preference in Relation to Male Traits in Wild Pied Flycatchers: Fitness Efficiency under Different Climatic Conditions	Ethology
Martin, et al.	Spain	Museo Nacional de Ciencias	Spain	No	2011	Differences in males' chemical signals between genetic lineages of the Lizard Psammodromus algirus provide male intersexual recognition and aggression but not female mate preferences	Behavioral Ecology and Sociology
Martinez-Inesa and Gerhardt	USA	Philadelphia Zoo	USA	No	2008	Advertisement-call modification, male competition, and female preference in the tri-colored treefrog, Hyla versica	Behavioral Ecology and Sociology
Marvin	USA - VA	Gallaudet University	USA - D.C.	No	2009	Sexual and Seasonal Dimorphism in the Cumberland Plateau Woodland Salamander, Plethodon kentucki (Caudata: Plethodontidae)	Copeia
Masaru, et al.	Japan	University of Tsukuba	Japan	No	2014	Colourful males hold high quality territories but exhibit reduced paternal care in their swallows	Behavior
Mason	Canada - Sask	University of Regina	Canada	No	2000	Reproductive ecology of the Western Hognose Snake, Heterodon nasicus	Journal of Herpetology
Matsuy	USA - CA	University of California -	USA	No	2010	Reproductive success and effective population size in seahorse (Hippocampus reidi)	Molecular Ecology
Matter and Roland	Canada - Alberta	University of Cincinnati	USA	No	2013	Mating failure of female Parnassius smintheus butterflies: a component but not a demographic Allee effect	Entomologia Experimentalis et Applicata
Matthew	New Zealand	Massey University	New Zealand	No	2008	The energetic cost of male guarding is correlated with territorial intrusions in the New Zealand stitchbird	Behavioral Ecology
Mauck, et al.	Canada - Kent Isle	Ohio State University	USA	No	1995	Monogamy in Leach's storm-petrel: DNA fingerprinting evidence	Auk
McCarthy and Sih	USA - CA	University of California -	USA	No	2009	Female choice in the Sierran tree frog Pseudacris sierra: interactions with male size and courtship	Ethology
McCarthy and Sih	USA - NY	Utica College	USA - NY	No	2008	Relatedness of males influences mating behaviour and reproductive success of the hermaphroditic freshwater snail Physa gyrina	Evolutionary Ecology Research
McCartney, et al.	Greece	Friedrich-Alexander Univ	Germany	No	2010	Lifetime spermatophore investment in natural populations of two closely related bush-cricket species (Orthoptera: Tettigoniidae: Pholidoptera)	Behaviour
McCurdy and Secord	USA	Cornell University	USA	No	1998	Nest-building behavior in PCB-contaminated Tree Swallows	The Auk
McCullough, et al.	Australia (SW)	University of Western Aus	Australia	No	2017	Benefits of polyandry: Molecular evidence from field-caught dung beetles	Molecular ecology
McDaniel, et al.	USA - MN	Bemidji State University	USA	No	2008	Effects of Wind Speed and Other Environmental Variables on Emergence in the Ornate Tree Lizard, Urosaurus ornatus?	Copeia
McGlothlin, et al.	USA - VA	Indiana University	USA	No	2008	Hormones and honest signals: males with larger ornaments elevate testosterone more when challenged	Journal of Evolutionary Biology
McGlothlin, et al.	USA - VA	University of Virginia	USA	No	2010	Natural Selection on Testosterone Production in a Wild Songbird Population	American Naturalist
McGraw, et al.	USA - CO	Colorado State University	USA - CO	No	2010	Reproductive factors of the red vicinar (Cyprinella lutrensis) after exposure to an exogenous estrogen	Canadian Journal of Fisheries & Aquatic Sciences
McInnes and Tuchman	USA - FL	Florida State University	USA	No	1995	Queen dimorphism and reproductive strategies in the fire and Solenopsis geminata (Hymenoptera: Formicidae)	Behavioral Ecology and Sociobiology
McLaughlin, et al.	Canada - Ontario	Trent University Peterbo	Canada	No	2010	Reproductive ecology of the Eastern Ratsnake	Copeia
McLachlan and Cant	UK - Northampton	The University of Newcast	UK	No	2010	Small males are more symmetrical: Mating success in the midge Chironomus plumosus L. (Diptera: Chironomidae)	Animal Behaviour
McLain	USA - GA	Emory University	USA	No	1980	Female Choice and the Adaptive Significance of Prolonged Copulation in Nezara viridula (Hemiptera: Pentatomidae)	Psyche (Cambridge, Massachusetts)
McLain	USA	Emory University	USA	No	1989	Chief variation in morphology and assortative mating in the soldier beetle, Chauliognathus pennsylvanicus (Coleoptera: Cantharidae)	Biological Journal of the Linnean Society
McLain	USA - GA, IN	Emory University	USA - GA	No	1989	Niche differentiation and the evolution of ethological isolation in a soldier beetle hybrid zone	Ohio
McLain and Boromisa	USA - GA	Emory University	USA	No	1992	Sexual selection and the evolution of sexual dimorphism in the soldier beetle Chauliognathus pennsylvanicus (Coleoptera: Cantharidae)	Behavioral Ecology and Sociology
McLean, et al.	Australia - Wellaw	University of Western Au	Australia	No	2009	Partnerships in the social system of a small marsupial mammal, the quokka (Setonix brachyurus)	Behavior
McLennan	Canada - Toronto	University of Toronto	Canada	No	1995	Male mate choice based upon female nuptial coloration in the brook stickleback, Culaea inconstans (Kirtland)	Animal Behavior
McLennan and Brines	Canada	University of Toronto	Canada	No	1991	Correlation between the level of infection with Bucephalus in mussels and Nosema/chytrichus cultii and behavioral intensity in female brook stickleback	Journal of Parasitology
McMahan and Gaugler	USA - NJ	Rutgers University	USA - NJ	No	1993	Spatial distribution of foraging male Tabanus nigrofibatus (Diptera: Tabanidae)	Environmental Entomology
McNair	USA	Indiana University	USA	No	1992	Mating patterns in the Eastern Spotted Skink (Scincella lateralis) (Sclerotia: Lifehollide)	Herpetological Monographs
McNair	SE Andes	Claude University of California,	California USA	No	1994	A pangy-to-base polymorph: Observations of the reproductive behavior of Falco kreutzberg)	Ornitologia Neotropical
McRae and Burke	UK	Cambridge	UK	No	1996	Intraspecific forced paradoxon in the mourners: Parentage and parade-host relationships determined by DNA fingerprinting	Behavioral Ecology and Sociology
McWilliams, et al.	USA - Washington	Andrews University	USA	No	2010	Clutching and copulation in Glaucous-winged Gulls, Larus glaucescens, and the influence of environmental variables	The Wilson Journal of Ornithology
Mead and Verrell	USA - KY, VA	University of Massachusi	USA	No	2002	Evolution of Courting Behaviour Patterns and Reproductive Isolation in the Desmognathus ochrophaeus Complex	Ethology
Meade, et al.	Canada - Ontario	Trent University Peterbo	Canada	No	2010	Reproductive ecology of the Eastern Ratsnake (Pantherophis alleghaniensis)	Copeia
Mead and Robertson	Canada - Ontario	Queens University	Canada	No	2010	Effects of male removal on the behavior and reproductive success of female Eastern Bluebirds Sialia sialis	Ibis
Meijer, et al.	Germany	University of Bielefeld	Germany	No	1999	Temperature and timing of egg laying of European Starlings	The Condor
Melaina, et al.	Canada	Ohio State University	USA	No	2002	Genetic analysis of the mating system and opportunity for sexual selection in northern water snakes (Nerodia sipedon)	Behavioral Ecology
Melekhova Rivas, et al.	USA - CA	University of California -	USA	No	2020	Mating systems is correlated with immunogenetic diversity in sympatric species of Peromyscus mice	PLoS One
Mellor, et al.	Australia - Victoria	Deakin University	Australia	No	2010	Male mate choice and female response to male courtship in a seasonally breeding amphibian: evidence for female availability	Behavioral Ecology
Mennerat, et al.	France	University of Bergen	Norway	No	2010	Correlates of complete brood failure in blue tits: could male pair mating provide unexpected benefits to females?	Ecology and Evolution
Mennill and Ratcliffe	Canada - Ontario	Queens University	Canada	No	2004	Need cavity orientation in black-capped chickadees(Parus atricapitus, do the acoustic properties of cavities influence sound reception in the nest and extra-pair matings?	Behavioral Ecology and Sociology
Mennill, et al.	USA - MT	University of Windsor	Canada	No	2005	Male House Finches with Elaborate Songs have Higher Reproductive Success	Ethology
Merckx and Van Dyck	Belgium	University of Antwerp	Belgium	No	2003	Male location behaviour of the butterfly Pararge aegeria in woodland and fragmented landscapes	Animal Behaviour
Michalczyk, et al.	Germany	University of Bielefeld	Germany	No	2011	Experimental evolution of female mate choice in response to male courtship harassment	Proc Royal Soc(ety) B Biological Sciences
Michiels and Dhondt	Belgium	University of Antwerp	Belgium	No	1991	Sources of variation in male mating success and female oviposition rate in a rostrectrical dragonfly	Behavioral Ecology and Sociology
Midtbøen and Kotrba	Spain	University of Stockholm	Sweden	No	2005	Copulation is Not a Prerequisite to Male Reception of Eggs in the Golden Egg Bug, Phyllomorpha laciniata (Coreidae: Heteroptera)	Journal of Insect Behavior
Mikus, et al.	USA - CA	Indiana University	USA	No	2010	Effect of acute stressor on reproductive behavior differs between urban and rural birds	Ecology and Evolution
Miller and Forde	USA	Blue Mountain Consortiu	USA	No	1999	Cues for Mate Recognition and the Effect of Prior Experience on Mate Recognition in Ensatina Oreinoftiea	Journal of Insect Behavior
Miller and Hemmenway	USA - Multiple	Cornell University	USA	No	2008	Sex Ratio Adjustment and Fitness Consequences in Response to Sperm Competition Intensity in Seed Beetles: Callosobruchus maculatus (Coleoptera: Chrysomelidae: Vaepsoidae)	Evolution
Miller and Wheeler	British Columbia, C	Cornell	USA	No	2010	Asymmetrical male mandibular horns and mating behavior in Agaliotoxin Flavus (Coleoptera: Lucanidae)	Journal of Insect Behavior
Miller, et al.	USA - MS	Department of Wildlife and USA - MS		No	1998	Reproductive characteristics of a wild turkey population	Journal of Wildlife Management
Millhouse Bigler, et al.	USA (SE Arizona	University of Wisconsin-Sto	USA	No	2010	Mating behavior and the evolution of multivariate mate preference evocations	The Auk
Millhouse Bigler, et al.	USA - AZ	University of Wisconsin -	USA - WI	No	2002	Reproductive behavior and correlations in blue-throated hummingbirds (a Journal of Ornithology	The Wilson Bulletin
Milonas, et al.	Greece	Agricultural University of	Greece	No	2010	Effect of male mating history and age on remating by female European corn borer	PLoS One
Minias, et al.	Poland	University of Łódź	Poland	No	2010	Colony size as a predictor of breeding behaviour in a coloniar waterbird	PLoS One
Mirfa, et al.	Canada	University of British Colu	Canada	No	2011	Genetic mating system and population history of the endangered Western Yellow-breasted Chat (i) in British Columbia, Canada	Canadian Journal of Zoology
Mitchell and McCrystal	USA - TX	Texas Tech University	USA - TX	No	2000	Reproductive ecology of the Western Diamondback Rattlesnake (Crotalus atrox)	Herpetological Monographs
Miranda, et al.	USA	Mississippi State	USA	No	2010	Floodplain within reservoirs provide refuge spawning of white crappie Pomoxis annularis	Environmental Biology of Fishes
Mishima, et al.	Japan - Multiple	The Kyushu University Mi	Japan	No	2014	Sexual isolation between Two Known Intraspecific Populations of Harlequin Ladybirds (Harmonia Axyridis) Indicate Possible Diversification Into Sibling Species	Annals of the Entomological Society of America
Miyazaki	USA - NC	Duke University	USA	No	1997	Facultative paternal investment in the polygynous beetle Onthophagus taurus: the role of male morphology and social context	Behavioral Ecology
Miyazaki	Australia - Carleton	University of Arizona	USA	No	2003	The behavioral ecology of threatened evolution in a polygynous beetle	Behavioral Ecology
Mizuno, et al.	Japan - Tokyo	Tokyo University of Agric	Japan	No	2000	Mate choice in the Japanese quail, Coturnix japonica: preference for bold and hatchery-reared copulatory suitors	Journal of the Yamashina Institute for Ornithology
Middleton, et al.	Canada	Laurentian University	Canada	No	2011	Assessing Mixed Morphology Conspecifics in the Modest Partner Turtle (Chrysemys picta marginata) Using a Photographic Questionnaire	Chelonian Conservation Model Morphology
Middleton, et al.	Canada (Ontario)	Laurentian University	Canada	Yes	2020	Sex, sheds, and weaponry: overcome reproductive tactics in the painted turtle, Chrysemys picta	Behavioral Ecology and Sociology
Mikel, et al.	Australia - East	Co Linnaean Reproductive Biology Associated with a Tropical Temperate Gradient in Phalaenopsis Arts		No	2008	Shift in Colonial Reproductive Biology Associated with a Tropical Temperate Gradient in Phalaenopsis Arts	American Naturalist
Mokhe and Moosewas	Ukraine	Universitè Pierre et Marie	France	No	2003	MUTATION AND SEXUAL SELECTION: A TEST USING BARN SWALLOWS FROM CHERNOBYL	Evolution
Molina, et al.	USA - MT	Montana State University	USA	No	2010	Sex-specific responses to fragmentation and habitat quality in Green Lizards	Behavioral Ecology
Monique, et al.	USA - FL	Emory University	USA	No	2018	Interesting depression in nature in butterflies	Journal of Insect Conservation
Monney, et al.	Spain	Universidade de Vigo	Spain	No	2005	Size-assortative mating in the earthworm Eisenia fetida(Oligochaeta, Lumbricidae)	Journal of Ethology
Montiglio, et al.	USA	UC Davis/McGill Univers	USA/Canada	Yes	2011	Correlational selection on personality and social plasticity: morphology and social context determine behavioural effects on mating success	Ethology
Moody	USA - OH, MI	University of Findlay	USA	No	2009	Mating Behavior and Male Territoriality in Eratigonia ringueum (Odonata: Coenagrionidae) on Ponds in Ohio and Northern Michigan	The Ohio Journal of Science
Moore, et al.	Canada - Ontario	Trent University Peterbo	Canada	No	2010	Reproductive ecology of the Eastern Ratsnake (Pantherophis alleghaniensis)	Herpetological Conservation
Moos, et al.	USA - PL	University of South Florid	USA	No	2008	Multiple Paternity and Breeding System in the Gopher Tortoise, Gopherus polyphemus	Journal of Heredity
Moreno, et al.	New Zealand - Car	Department Of Conservation	New Zealand	No	2001	Provenance and sex ratio of Black-breast Albatross, Thalassarche melanophrys, breeding on Campbell Island, New Zealand	Emu
Moore, et al.	USA - MI	Grand Valley State University	USA - MI	No	2010	Social network analysis of mating patterns in American black bears (Ursus americanus)	Molecular Ecology
Moore, et al.	USA - MI	Grand Valley University	USA - MI	No	2020	Nest Site Fidelity and Sex-Biased Dispersal Affect Spatial Genetic Structure of Eastern Box Turtles (Terrapene carolina carolina) at Their Northern Range Edge	Copeia
Morales and Bar	USA - MA, IL	Boston University	USA	No	2004	Sex-specific costs of parental care: a field experiment on the burying beetle Nicrophorus vespilloides	Behavioral Ecology
Moran, et al.	UK	Waterford Institute of Tech	Ireland	No	2010	Multiple paternity in the European hedgehog	Journal of Zoology
Moreno-Rueda, et al.	France	Universite de Poitiers	France	No	2009	Operational sex ratio in terrestrial isopods: interaction between potential rate of reproduction and Wolbachia-induced sex-ratio distortion	Oikos
Moreno-Rueda, et al.	Chile	Universidad Católica del Chile	Chile	No	2010	Chemical composition of the freshwater prawn Cryphiops caementarius (Molina, 1782) (Decapoda: Palaemonidae) in two populations in northern Chile: reproductive and environmental considerations/Composición química del camarón de río Cryphiops caementarius (Molina, 1782) (Decapoda: Palaemonidae) en dos poblaciones del norte de Chile: consideraciones reproductivas y ambientales	Latin American Journal of Aquatic Research
Moshiri, et al.	Iran	Islamic Azad University	Iran	No	2014	Study of Sperm Reproductive Parameters in Mature Zarjaw Viper	Cell Journal
Mouton and Van Damme	Belgium	Ghent University Museum	Belgium	No	2009	Male mate choice in the Lacertid lizard Podarcis hispanica: the role of physically fluctuating predation risk	Ethology
Mousseau and Collins	Canada - Ontario	University of Toronto - M	Canada	No	2007	Pledging and meal-size abundance in the dung scuplion (Onthus cognatus)	CAN. J. ZOOL./J. CAN. ZOOL
Murcia, et al.	USA	Texas State University	USA	No	2014	Does male behavior gain correlate with species recognition and stress?	Behavioral Ecology
Murakami, et al.	Japan - Hokkaido	Kyoto University	Japan	No	2010	Mating frequency, gamete structure, and sex-ratio in the intersexually female producing, ant species Myrmecina nipponica	Ecological Entomology
Murphy	USA - NY	Hartwick College	USA - NY	No	1998	Sun worship, breeding, dispersal and male fidelity in eastern kingbirds	Condor
Murphy, et al.	USA - NY	Hartwick College	USA -

Copyright © 2025 Elsevier Ltd, an imprint of Elsevier, Inc.
All rights reserved.
This edition of the work is protected by unrighted persons under, inter alia, the Moral Rights Act 1988. No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without the prior written permission of Elsevier Ltd. Permission may be sought directly from Elsevier. Details are available at the Elsevier website: www.elsevier.com/permissions.
Notice: Neither the author nor the publisher has any responsibility or liability for any injuries, losses, or damages to persons or property arising from the use of any material in this publication.

Publisher: Elsevier
Publication Date: 2025
Pages: 1–8
Volume: 1
Issue: 1
Publication Type: Journal
Publication Name: Elsevier Journal of Medicine
Publication Number

This is the author's accepted manuscript without copyediting, formatting, or final corrections. It will be published in its final form in an upcoming issue of
The American Naturalist, published by The University of Chicago Press. Include the DOI when citing or quoting:
https://doi.org/10.1086/722797. Copyright 2022 The University of Chicago.

Year	Number of Papers
1992	1
1994	1
1996	1
1999	1
2001	1
2002	2
2004	1
2005	3
2006	1
2007	3
2008	6
2009	4
2010	3
2011	4
2012	4
2013	3
2014	3
2015	7
2016	1
2017	6
2018	2
2019	1
2020	1

Year	Temperate-Pape	Tropical-Papers	Total-Papers
1979	1	0	1
1980	1	0	1
1981	1	0	1
1982	1	1	2
1983	3	2	5
1984	5	2	7
1985	6	3	9
1986	6	4	10
1987	9	3	12
1988	13	6	19
1989	7	2	9
1990	11	4	15
1991	4	0	4
1992	9	6	15
1993	12	3	15
1994	13	1	14
1995	20	12	32
1996	16	4	20
1997	10	10	20
1998	23	7	30
1999	31	11	42
2000	39	10	49
2001	29	15	44
2002	29	14	43
2003	38	17	55
2004	64	23	87
2005	59	16	75
2006	55	27	82
2007	46	31	77
2008	70	49	119
2009	72	40	112
2010	71	26	97
2011	79	38	117
2012	77	36	113
2013	68	43	111
2014	53	27	80
2015	57	40	97
2016	43	27	70
2017	50	35	85
2018	31	39	70
2019	27	19	46
2020	29	20	49
2021	2	1	3

WOS Data		Mentions of "sexual Conflict" on WC
Publication Years	Record Count	% of 2,580
1968	1	0.039
1969	1	0.039
1971	1	0.039
1975	1	0.039
1976	1	0.039
1980	2	0.078
1982	1	0.039
1983	1	0.039
1984	5	0.194
1988	1	0.039
1989	2	0.078
1990	2	0.078
1991	5	0.194
1992	4	0.155
1993	3	0.116
1994	8	0.31
1995	12	0.465
1996	12	0.465
1997	10	0.388
1998	25	0.969
1999	20	0.775
2000	32	1.24
2001	33	1.279
2002	50	1.938
2003	61	2.364
2004	74	2.868
2005	102	3.953
2006	94	3.643
2007	117	4.535
2008	120	4.651
2009	151	5.853
2010	128	4.961
2011	128	4.961
2012	132	5.116
2013	133	5.155
2014	175	6.783
2015	147	5.698
2016	132	5.116
2017	141	5.465
2018	144	5.581
2019	175	6.783
2020	119	4.612
2021	74	2.868

This is the author's accepted manuscript without copyediting, formatting, or final corrections. It will be published in its final form in an upcoming issue of
The American Naturalist, published by The University of Chicago Press. Include the DOI when citing or quoting:
https://doi.org/10.1086/722797. Copyright 2022 The University of Chicago.

)S each year since 1966

This is the author's accepted manuscript without copyediting, formatting, or final corrections. It will be published in its final form in an upcoming issue of
The American Naturalist, published by The University of Chicago Press. Include the DOI when citing or quoting:
https://doi.org/10.1086/722797. Copyright 2022 The University of Chicago.

Author	Study Location	Lead Author Affili	Lead A	Conflict	Year	Title	Journal	Species	Group	Biome Type	Evidence of sexual conflict	Strength of evidence (High, Low,	Species average	Temperate Spec	Tropical species effect (average for duplicates, per species studied)
Maher, et al.	Australia, Port	Universities of She	UK	Yes	2017	High fidi	Journal of avian biology	8 Charadrius spp.	Bird	Temperate	Behavioral: Extra pair young freq	Absent	-1	-1	2
Reinhardt, et al.	Kenya	University of Sheff	UK	Yes	2007	Female-I	American Naturalist	*Afrocimex constri*	Insect	Tropical	Morphological: variation in Fema	High	2	-1	1
Sorenson	Bahamas (Nass	University of Minn	USA	Yes	1994	Forced e	Animal Behaviour	*Anas bahamensis*	Bird	Tropical	Behavioral: Forced extra pair co	Low	1	-1	1
Montiglio, et al.	USA	UC Davis/McGill U	USA/C	Yes	2017	Correlat	Journal of Animal Ecolo	*Aquarius remigis*	Insect	Temperate	Morphological: foreleg shape an	High	2	-1	1
Lauer, et al.	USA	University of Kent	USA	Yes	1996	Male de	Animal Behaviour	*Aquarius remigis*	Insect	Temperate	Behavioral: Female mating resist	High	2	-1	1
Cory and Schneider	France/Germar	Universität Hamb	Germa	Yes	2018	Effects c	Ecology & Evolution (20	*Argiope bruennich*	Arachnid	Temperate	Behavioral: male mating frequen	Neutral	0	-1	1
Beese, et al.	Switzerland	University of Base	Switze	Yes	2006	Coevolu	Journal of Evolutionary	*Arianta arbustoru*	Mollusk	Temperate	Morphological: sperm quality, tra	Low	1	-1	-1
Kupfernagel, et al.	Switzerland	University of Base	Switze	Yes	2010	Variatio	Biological Journal of the	*Arianta arbustoru*	Mollusk	Temperate	Behavioral: mating frequency	High	2	-1	1
Gibson, et al.	Peru (Cocha Ca	Yale	USA	Yes	2008	Intra-co	American Journal of Pri	*Ateles belzebuth*	Mammal	Tropical	Behavioral: infanticide and force	Low	1	2	
Goenaga, et al.	USA (California	Uppsala University	Swede	Yes	2015	Within-s	BMC Evolutionary Biolo	*Callosobruchus m*	Insect	Temperate	Morphological: seminal protein a	High	2	0	
Cordero	Italy	Universidade de \	Spain	Yes	1999	Forced c	Journal of Insect Behavi	*Calopteryx haemo*	Insect	Temperate	Behavioral: forced copulation an	High	2	1.5	
Rivera and Andres	Italy	Universidade de \	Spain	Yes	2002	Male co	Journal of Insect Scienc	*Calopteryx haemo*	Insect	Temperate	Behavioral: forced copulation an	High	2	2	
Okuzaki and Sota	Japan (Kyoto &	Kyoto University	Japan	Yes	2014	How the	Journal of the Evolutionary	*Carabus (Ohomo*	Insect	Temperate	Morphological and Behavioral	Low	1	2	
Moldowan, et al.	Canada (Ontari	Laurentian Univer	Canad	Yes	2020	Sex, she	Behavioral Ecology and	*Chrysemys picta*	Reptile	Temperate	Morphological and Behavioral	High	2	1	
Shuker and Day	UK	University of Edint	UK	Yes	2002	Mate sa	Behavioral Ecology	*Coelopa frigida*	Insect	Temperate	Behavioral: female acceptance	High	2	2	
Goenaga, et al.	Argentina	Universidad de Bu	Argent	Yes	2012	The effe	Evolutionary Ecology	*Drosophila melan*	Insect	Temperate	Behavioral: survival after mating	Low	1	1	
Seeley and Dukas	Canada (S. Ont	McMaster Univers	Canad	Yes	2011	Teneral	Animal Behaviour	*Drosophila melan*	Insect	Temperate	Behavioral: forced copulation an	Low	1	2	
While, et al.	Australia (Tasm	University of Tasm	Austra	Yes	2011	Variatio	Molecular Ecology	*Egernia whitii*	Reptile	Temperate	Behavioral: extra pair paternity fr	Neutral	0	0	
Winfrey and Fincke	USA	University of Oklal	USA	Yes	2017	Role of v	International Journal of	*Enallagma civile*	Insect	Temperate	Behavioral: male coercive behav	Neutral	0	0	
Bisazza and Marin	USA (southern	Università di Pad	Italy	Yes	1995	Sexual s	Ethology Ecology & Evo	*Gambusia holbroo*	Fish	Temperate	Behavioral: male sneak/coercive	Low	1	1	
Gagnon and Turgeon	Canada (N. Que	Université Laval	Canad	Yes	2011	Sexual c	Journal of Evolutionary	*Gerris gillettei*	Insect	Temperate	Behavioral: rejection and coercic	Low	1	1	
Manguette, et al.	Republic of Cor	Max Planck Institu	Leipzig	Yes	2019	Intersex	Behavioral Ecology and	*Gorilla gorilla*	Mammal	Tropical	Behavioral: infanticide and coerc	Low	1	1	
Bretman and Tregenza	Spain	Universities of Lee	UK	Yes	2005	Measuri	Molecular Ecology	*Gryllus bimaculat*	Insect	Temperate	Behavioral: multiple or biased pa	Low	1	2	
Bertran, et al.	Spain	El Pont de Suert	Spain	Yes	2009	Agonisti	Ethology	*Gypaetus barbatu*	Bird	Temperate	Behavioral: aggressive male tact	High	2	1.75	
Van Gossum, et al.	Belgium	University of Antw	Belgiur	Yes	2001	Frequen	Behavioral Ecology and	*Ischnura elegans*	Insect	Temperate	Behavioral: male mating harassn	High	2	1.75	1
Hammers and Hans Van	Belgium/Nethe	University of Gror	Nether	Yes	2008	Variatio	Animal Behaviour	*Ischnura elegans*	Insect	Temperate	Behavioral: male mating harassn	Low	1	1	
Rosa, et al.	Spain	Instituto de Ecolo	Mexicc	Yes	2017	Alternat	Ecology and Evolution	*Ischnura elegans*	Insect	Temperate	Behavioral: male mating harassn	High	2	2	
Gosden and Svensson	Sweden	Lund University	Swede	Yes	2009	Density-	American Naturalist	*Ischnura elegans*	Insect	Temperate	Fitness: costs to female, Behavic	High	2	1.666667	
Takahashi and Watanabe	Japan (Ibaraki	University of Tsuk	Japan	Yes	2009	Diurnal	Entomological Science	*Ischnura senegal*	Insect	Temperate	Behavioral: male mating harassn	Low	1	1	
Olsson, et al.	Sweden	University of Goth	Swede	Yes	2004	FECUND	Evolution	*Lacerta agilis*	Reptile	Temperate	Behavioral: mating duration	Low	1	1	
Fitze, et al.	France	Ecole Normale Su	France	Yes	2005	Conflict	Evolution	*Lacerta vivipara*	Reptile	Temperate	Behavioral: multiple mating	Low	1	1.666666667	0
Le Galliard, et al.	France	Université Pierre	France	Yes	2008	LIFETIM	Ecology	*Lacerta vivipara*	Reptile	Temperate	Fitness: female costs, Behaviora	High	2	2	
Dreiss, et al.	France	Université Pierre	France	Yes	2010	Age- and	Behavioral Ecology	*Lacerta vivipara*	Reptile	Temperate	Fitness: body condition and repr	High	2	2	
	Kenya	Cornell University	Ithaca,	Yes	2007	Female	Proceedings of the Roy	*Lamprotornis sup*	Bird	Tropical	Behavioral: extrapair copulation	Low	1	0	
Rabaneda-Bueno, et al.	Spain	stación Experimer	Spain	Yes	2008	Sexual C	PLoS ONE	*Lycosa tarantula*	Arachnid	Temperate	Behavioral: sexual cannibalism	High	2	2	
Evans, et al.	Italy/Sweden	University of Edint	UK	Yes	2015	Patterns	Biological Journal of the	*Lygaeus simulans*	Insect	Temperate	Behavioral: outcrossing propens	Low	1	2	
Cook, et al.	USA (Hawaii)	James madison un	USA	Yes	2018	Sexual c	Animal Behaviour	*Megalagrion calli*	Insect	Tropical	Behavioral: different female hara	Absent	-1	1.5	
Akçay, et al.	USA (Seattle)	University of Was	USA	Yes	2012	Who init	Behavioral Ecology	*Melospiza melodi*	Bird	Temperate	Behavioral: extrapair copulation,	Neutral	0	2	
Iserbyt, et al.	Canada	University of Antw	Belgiur	Yes	2013	Negative	BMC Evolutionary Biolo	*Nehalennia irene*	Insect	Temperate	Behavioral: male harassment, Fit	High	2	2	1
Bots, et al.	Canada	University of Antw	Belgiur	Yes	2015	Frequen	American Naturalist	*Nehalennia irene*	Insect	Temperate	Behavioral: male mating harassn	High	2	2	
Bleeker, et al.	Germany/Neth	University of Agde	Norwa	Yes	2017	Evidence	PLoS One	*Neogobius melan*	Fish	Temperate	Morphological: gonadal mass an	High	2	2	
Brekke, et al.	New Zealand	Zoological Society	UK	Yes	2012	Postcop	Behavioral Ecology	*Notiomystis cincta*	Bird	Temperate	Behavioral: extra pair mating	Neutral	0	2	
Grayson, et al.	USA (Mountain	University of Virgi	USA	Yes	2012	Behavio	Frontiers in Zoology	*Notophthalmus vi*	Amphibian	Temperate	Behavioral: female stress respon	High	2	2	
Hornhill	Japan	University of New	USA	Yes	1992	Fluctuat	Animal Behaviour	*Panorpa japonica*	Insect	Temperate	Behavioral: nuptial gift giving anc	High	2	2	
Hsu, Yu-Hsn	UK	University of Otag	New Ze	Yes	2015	Are extr	Molecular Ecology	*Passer domesticu*	Bird	Temperate	Morphological: male body size, F	Low	1	2	
Hsu, et al.	UK	University of Otag	New Ze	Yes	2014	COSTLY	Evolution	*Passer domesticu*	Bird	Temperate	Fitness and Behavioral: extra pai	High	2	1.5	2
García-Navas, et al.	Spain	Instituto de Invest	Spain	Yes	2013	Mating s	Behaviour	*Petronia petronia*	Bird	Temperate	Behavioral: allocation to parental	High	2	2	
Kauch, et al.	Slovakia	Slovak Academy	Slovak	Yes	2015	Environr	Evolutionary Ecology	*Pholidoptera grise*	Insect	Temperate	Behavioral: multiple mating, and	Low	1	2	
Facon, et al.	Switzerland	University of Laus	Switze	Yes	2007	Effect of	Animal Behaviour	*Physa acuta*	Mollusk	Temperate	Behavioral: gender selection	High	2	2	
Sugano and Akimoto	Japan (Hokkaid	Hokkaido Univers	Japan	Yes	2011	Mating a	Behavioral Ecology	*Podisma sapporo*	Insect	Temperate	Behavioral: outcrossing propens	High	2	1	
Makowicz and Schlupp	USA (Texas)	University of Oklal	USA	Yes	2013	The dire	Animal Behaviour	*Poecilia latipinna*	Fish	Temperate	Fitness: female, Behavioral: male	High	2	2	
Head, et al.	Australia (Tow	University of New	Austra	Yes	2008	OPERAT	Evolution	*Poecilia reticulata*	Fish	Tropical	Behavioral: male pursuit, multiple	Low	1	2	
Conroy and Gray	USA (California	CSU Northridge	USA	Yes	2015	Male Arr	Insects	*Pristoceuthophilu*	Insect	Temperate	Morphological: male weaponry, a	High	2	1	
Barry	Australia (Kurir	Macquarie Univer	Austra	Yes	2015	Sexual d	Proceedings of the Roy	*Pseudomantis alb*	Insect	Temperate	Behavioral: female chemical sign	High	2		
Lode, Thierry	France	Université de Ren	France	Yes	2009	Mating s	Ethos	*Rana dalmatina*	Amphibian	Temperate	Behavioral: polyandy, mating cos	High	2		
Pogány, et al.	Hungary	Eötvös University	Hunga	Yes	2008	Sexual c	BMC Evolutionary Biolo	*Remiz pendulinus*	Bird	Temperate	Behavioral: offspring desertion	High	2		
Gress, et al.	USA (NY)	Syracuse Universit	USA	Yes	2016	Stepping	Behaviour	*Scathophaga sten*	Insect	Temperate	Morphological: male size, Behavi	Low	1		
Whittingham and Dunn	USA (Wisconsi	University of Wisc	USA	Yes	2010	Fitness t	Molecular Ecology	*Tachycineta bicol*	Bird	Temperate	Behavioral: extrapair mating, pol	High	2		
Friesen, et al.	Canada (Manit	Oregan State Univ	USA	Yes	2014	Sexual c	Proceedings of the Roy	*Thamnophis sirtal*	Reptile	Temperate	Morphological: male spine, Beha	High	2	2	
Shine, et al.	Canada (Manit	University of Sydn	Austra	Yes	2005	DOES LA	Evolution	*Thamnophis sirtal*	Reptile	Temperate	Morphological: male body, Behav	High	2		
Gosselin, et al.	Sweden	Université de She	Canad	Yes	2017	Hunting	Journal of Animal Ecolo	*Ursus arctos*	Mammal	Temperate	Behavioral: sexually selected infi	Low	1		

Duplicate species	12	all temperate
Extra species papers	12	1 tropical, 11 temperate
Total species studied	61	
Unique species populations studied	65	

		log	sexual	log	proportior	conflict temp	and trop conflic	weight	weighted conflict proportion	standardized proportion
Total temperate	1300	3.113943352	53	1.7243	0.657562	0.0323	0.868852459	0.304153846	0.264264817	0.463094178
Total tropical	677	2.830588669	8	0.9031	0.342438	0.0103	0.131147541	2.336189069	0.306385452	0.536905822
	1977	3.296006669	61						0.570650269	

	sum	average
Effect size temperate	58.416667	1.102201264
Effect size tropical	7	0.875

	total	proportion	tempc	tropical	range	lifespar	average effect size	standardized average effect size
Amphibian	2	0.032786885	2	0	medium	short	2	0.197389594
Arachnid	2	0.032786885	2	0	short	short	1	0.098694797
Bird	17	0.278688525	15	2	long	long	0.125	0.01233685
Fish	4	0.06557377	3	1	medium	short	1.5	0.148042196
Insect	25	0.409836066	23	2	short	short	1.423913043	0.140532809
Mammal	4	0.06557377	1	3	long	long	1	0.098694797
Mollusk	2	0.032786885	2	0	short	short	1.75	0.172715895
Reptile	5	0.081967213	5	0	medium	long	1.333333333	0.131593063
Total	61						10.13224638	1

This is the author's accepted manuscript without copyediting, formatting, or final corrections. It will be published in its final form in an upcoming issue of The American Naturalist, published by The University of Chicago Press. Include the DOI when citing or quoting: https://doi.org/10.1086/722797. Copyright 2022 The University of Chicago.

Tropical Country	Number of Studies	Percent
Argentina	24	3.145478375
Australia	43	5.635648755
Azores	1	0.131061599
Bahamas	4	0.524246396
Barbados	1	0.131061599
Belize	2	0.262123198
Bioko	1	0.131061599
Bolivia	1	0.131061599
Borneo	1	0.131061599
Botswana	2	0.262123198
Burkino Faso	1	0.131061599
Burundi	1	0.131061599
Brazil	108	14.15465269
Cameroon	3	0.393184797
Canary Islands	1	0.131061599
Cape Verde	1	0.131061599
Chile	1	0.131061599
China	38	4.98034076
Columbia	15	1.965923984
Congo (DRC)	5	0.655307995
Costa Rica	32	4.193971166
cote d'ivoire	1	0.131061599
Cuba	2	0.262123198
Durban	1	0.131061599
Ecuador	2	0.262123198
Egypt	1	0.131061599
El Salvador	1	0.131061599
Ethiopia	2	0.262123198
French Guiana	9	1.179554391
French Polynesia	1	0.131061599
Gabon	1	0.131061599
Galapagos - Ecua	6	0.786369594
Ghana	1	0.131061599
Guadalupe	3	0.393184797
Guatemala	5	0.655307995
Guam	1	0.131061599
Guiana	3	0.393184797
Hawaii	17	2.228047182
Haiti	1	0.131061599
Hispanola	1	0.131061599
Honduras	2	0.262123198
India	19	2.49017038
Indonesia	8	1.048492792
Iran	1	0.131061599
Japan	18	2.359108781
Korean Penninsul	1	0.131061599
Kenya	22	2.883355177
La Reunion (Fran	4	0.524246396
Lake Malawi (exac	2	0.262123198
Lake Taganyika (e	1	0.131061599
Lesser Antilles	1	0.131061599
Lome	1	0.131061599
Madagascar	15	1.965923984
Malawi	2	0.262123198
Mali	1	0.131061599
Malaysia	9	1.179554391
Martinique	1	0.131061599
Mayotte	1	0.131061599
Mexico	58	7.601572739
Morocco	1	0.131061599
Namibia	3	0.393184797
New Caledonia	2	0.262123198
Nicaragua	1	0.131061599
Niger	1	0.131061599
Nigeria	2	0.262123198
Pakistan	3	0.393184797
Panama	30	3.931847969
Papua New guinea	3	0.393184797
Peru	15	1.965923984
Portugal	1	0.131061599
Puerto Rico	11	1.441677588
Samoa	3	0.393184797
Sao-tome & Princi	2	0.262123198
Saudi Arabia	1	0.131061599
Seychelles (Cousi	2	0.262123198
Solomon Islands	3	0.393184797
South Africa	23	3.014416776
South Pacific Islan	2	0.262123198
Sri Lanka	2	0.262123198
St. Lucia	1	0.131061599
Sulawesi	2	0.262123198
Suriname	2	0.262123198
Syria	1	0.131061599
Taiwan	12	1.572739187
Tanzania	13	1.703800786
Thailand	9	1.179554391
Tonga	1	0.131061599
Trinidad & Tobago	28	3.669724771
Turkey	2	0.262123198
UAE	1	0.131061599
Uganda	7	0.917431193
Upper Volta	1	0.131061599
Uruguay	14	1.834862385
USA	22	2.883355177
Yemen	1	0.131061599
Venezuela	5	0.655307995
Zaire	1	0.131061599
Zambia	14	1.834862385
Zimbabwe	3	0.393184797
Total	**763**	

Temperate Country	Number of Studies	Percent
Alaska	1	0.070771408
Algeria	5	0.353857042
Argentina	18	1.27388535
Australia	57	4.033970276
Austria	7	0.495399858
Azores	2	0.141542817
Belgium	10	0.707714084
Bulgaria	4	0.283085633
Canada	117	8.280254777
Cape Verde	1	0.070771408
Chile	5	0.353857042
China	28	1.981599434
Corsica	1	0.070771408
Cyprus	1	0.070771408
Czech Republic	18	1.27388535
Denmark	6	0.42462845
Egypt	2	0.141542817
England	9	0.636942675
Falkland Islands	1	0.070771408
Finland	19	1.344656759
France	66	4.670912951
Georgia	2	0.141542817
Germany	48	3.397027601
Gibraltar	4	0.283085633
Great britain	1	0.070771408
Greece	18	1.27388535
Hungary	13	0.920028309
Iceland	2	0.141542817
India	1	0.070771408
Inner Mongolia	3	0.212314225
Iran	6	0.42462845
Ireland	4	0.283085633
Israel	10	0.707714084
Italy	55	3.892427459
Japan	50	3.538570418
Jordan	1	0.070771408
Kazakhstan	2	0.141542817
Korea	1	0.070771408
Kyrgystan	1	0.070771408
Latvia	1	0.070771408
Lebanon	1	0.070771408
Morroco	3	0.212314225
Netherlands	14	0.990799717
New Zealand	27	1.910828025
Norway	13	0.920028309
Poland	16	1.132342534
Portugal	13	0.920028309
Romania	3	0.212314225
Russia	9	0.636942675
Scotland	13	0.920028309
Serbia	1	0.070771408
Slovakia	1	0.070771408
Slovenia	2	0.141542817
South Africa	10	0.707714084
South Korea	1	0.070771408
Spain	72	5.095541401
Sweden	46	3.255484784
Switzerland	34	2.406227884
Syria	1	0.070771408
Taiwan	1	0.070771408
Tasmania	1	0.070771408
Tibet	1	0.070771408
Turkey	13	0.920028309
UK	35	2.476999292
Ukraine	4	0.283085633
USA	470	33.26256192
Wales	7	0.495399858
Total	1413	

Combined Country	Number of Studies	Percent Total
Alaska	1	0.045955882
Algeria	5	0.229779412
Argentina	42	1.930147059
Australia	100	4.595588235
Austria	7	0.321691176
Azores	3	0.137867647
Bahamas	4	0.183823529
Barbados	1	0.045955882
Belgium	10	0.459558824
Belize	2	0.091911765
Bioko	1	0.045955882
Bolivia	1	0.045955882
Borneo	1	0.045955882
Botswana	2	0.091911765
Bulgaria	4	0.183823529
Burkino Faso	1	0.045955882
Burundi	1	0.045955882
Brazil	108	4.963235294
Cameroon	3	0.137867647
Canada	117	5.376838235
Canary Islands	1	0.045955882
Cape verde	2	0.091911765
Chile	6	0.275735294
China	66	3.033088235
Columbia	15	0.689338235
Congo (DRC)	5	0.229779412
Corsica	1	0.045955882
Costa Rica	32	1.470588235
Cote d'ivoire	1	0.045955882
Cuba	2	0.091911765
Cyprus	1	0.045955882
Czech Republic	18	0.827205882
Denmark	6	0.275735294
Durban	1	0.045955882
Ecuador	2	0.091911765
Egypt	3	0.137867647
El Salvador	1	0.045955882
England	9	0.413602941
Ethiopia	2	0.091911765
Falkland Islands	1	0.045955882
Finland	19	0.873161765
France	66	3.033088235
French Guiana	9	0.413602941
French Polynesia	1	0.045955882
Gabon	1	0.045955882
Galapagos	6	0.275735294
Georgia	2	0.091911765
Germany	48	2.205882353
Gibraltar	4	0.183823529
Ghana	1	0.045955882
Great Britan	1	0.045955882
Greece	18	0.827205882
Guadalupe	3	0.137867647
Guatemala	5	0.229779412
Guam	1	0.045955882
Guiana	3	0.137867647
Hawaii	17	0.78125
Haiti	1	0.045955882
Hispaniola	1	0.045955882
Honduras	2	0.091911765
Hungary	13	0.597426471
Iceland	2	0.091911765
India	20	0.919117647
Indonesia	8	0.367647059
Inner Mongolia	3	0.137867647
Iran	7	0.321691176
Ireland	4	0.183823529
Israel	10	0.459558824
Italy	55	2.527573529
Japan	68	3.125
Jordan	1	0.045955882
Kazakhstan	2	0.091911765
Korea	2	0.091911765
Kenya	22	1.011029412
Kyrgystan	1	0.045955882
Latvia	1	0.045955882
La Reunion	4	0.183823529
Lake Malawi (exac	2	0.091911765
Lake Taganyika (e	1	0.045955882
Lebanon	1	0.045955882
Lesser Antilles	1	0.045955882
Lome	1	0.045955882
Madagascar	15	0.689338235
Malawi	2	0.091911765
Mali	1	0.045955882
Malaysia	9	0.413602941
Martinique	1	0.045955882
Mayotte	1	0.045955882
Mexico	58	2.665441176
Morocco	4	0.183823529
Namibia	3	0.137867647
Netherlands	14	0.643382353
New Caledonia	2	0.091911765
New Zealand	27	1.240808824
Nicaragua	1	0.045955882
Niger	1	0.045955882
Nigeria	2	0.091911765
Norway	13	0.597426471
Pakistan	3	0.137867647
Panama	30	1.378676471
Papua New guinea	3	0.137867647
Peru	15	0.689338235
Poland	16	0.735294118
Portugal	14	0.643382353
Puerto Rico	11	0.505514706
Romania	3	0.137867647
Russia	9	0.413602941
Samoa	3	0.137867647
Sao-tome & Princi	2	0.091911765
Saudi Arabia	1	0.045955882
Scotland	13	0.597426471
Serbia	1	0.045955882
Seychelles (Cousi	2	0.091911765
Slovakia	1	0.045955882
Slovenia	2	0.091911765
Solomon Islands	3	0.137867647
South Africa	33	1.516544118
South Korea	1	0.045955882
South Pacific Islan	2	0.091911765
Spain	72	3.308823529
Sri Lanka	2	0.091911765
St. Lucia	1	0.045955882
Sulawesi	2	0.091911765
Suriname	2	0.091911765
Sweden	46	2.113970588
Switzerland	34	1.5625
Syria	2	0.091911765
Taiwan	13	0.597426471
Tanzania	13	0.597426471
Tasmania	1	0.045955882
Tibet	1	0.045955882
Thailand	9	0.413602941
Tonga	1	0.045955882
Trinidad & Tobago	28	1.286764706
Turkey	15	0.689338235
UAE	1	0.045955882
Uganda	7	0.321691176
UK	35	1.608455882
Ukraine	4	0.183823529
Upper Volta	1	0.045955882
Uruguay	14	0.643382353
USA	492	22.61029412
Venezuela	5	0.229779412
Wales	7	0.321691176
Yemen	1	0.045955882
Zaire	1	0.045955882
Zambia	14	0.643382353
Zimbabwe	3	0.137867647
TOTAL	2176	

Conflict Country	Number of Studies
Argentina	1
Australia	3
Azores	1
Bahamas	1
Belgium	2
Canada	7
Cape verde	1
England	1
France	1
France	4
Germany	2
Hawaii	1
Hungary	1
Italy	3
Japan	4
Kenya	2
Mexico	1
Netherlands	2
New Zealand	1
Peru	1
Republic of Congo	1
Slovakia	1
Spain	1
Spain	3
Sweden	4
Switzerland	3
Turkey	1
UK	2
USA	11

Country Name	Country Code
Aruba	ABW
Africa Eastern and Sout	AFE
Afghanistan	AFG
Africa Western and Cen	AFW
Angola	AGO
Albania	ALB
Andorra	AND
Arab World	ARB
United Arab Emirates	ARE
Argentina	ARG
Armenia	ARM
American Samoa	ASM
Antigua and Barbuda	ATG
Australia	AUS
Austria	AUT
Azerbaijan	AZE
Burundi	BDI
Belgium	BEL
Benin	BEN
Burkina Faso	BFA
Bangladesh	BGD
Bulgaria	BGR
Bahrain	BHR
Bahamas, The	BHS
Bosnia and Herzegovina	BIH
Belarus	BLR
Belize	BLZ
Bermuda	BMU
Bolivia	BOL
Brazil	BRA
Barbados	BRB
Brunei Darussalam	BRN
Bhutan	BTN
Botswana	BWA
Central African Republic	CAF
Canada	CAN
Central Europe and the	CEB
Switzerland	CHE
Channel Islands	CHI
Chile	CHL
China	CHN
Cote d'Ivoire	CIV
Cameroon	CMR
Congo, Dem. Rep.	COD
Congo, Rep.	COG
Colombia	COL
Comoros	COM
Cabo Verde	CPV
Costa Rica	CRI
Caribbean small states	CSS
Cuba	CUB
Curacao	CUW
Cayman Islands	CYM
Cyprus	CYP
Czech Republic	CZE
Germany	DEU
Djibouti	DJI
Dominica	DMA
Denmark	DNK
Dominican Republic	DOM
Algeria	DZA
East Asia & Pacific (exc	EAP
Early-demographic divic	EAR
East Asia & Pacific	EAS
Europe & Central Asia (	ECA
Europe & Central Asia	ECS
Ecuador	ECU
Egypt, Arab Rep.	EGY
Euro area	EMU
Eritrea	ERI
Spain	ESP
Estonia	EST
Ethiopia	ETH
European Union	EUU
Fragile and conflict affe	FCS
Finland	FIN
Fiji	FJI
France	FRA
Faroe Islands	FRO
Micronesia, Fed. Sts.	FSM
Gabon	GAB
United Kingdom	GBR
Georgia	GEO
Ghana	GHA
Gibraltar	GIB
Guinea	GIN
Gambia, The	GMB
Guinea-Bissau	GNB
Equatorial Guinea	GNQ
Greece	GRC
Grenada	GRD
Greenland	GRL
Guatemala	GTM
Guam	GUM
Guyana	GUY
High income	HIC
Hong Kong SAR, China	HKG
Honduras	HND
Heavily indebted poor c	HPC
Croatia	HRV
Haiti	HTI
Hungary	HUN
IBRD only	IBD
IDA & IBRD total	IBT
IDA total	IDA
IDA blend	IDB
Indonesia	IDN
IDA only	IDX
Isle of Man	IMN
India	IND
Not classified	INX
Ireland	IRL
Iran, Islamic Rep.	IRN
Iraq	IRQ
Iceland	ISL
Israel	ISR
Italy	ITA
Jamaica	JAM
Jordan	JOR
Japan	JPN
Kazakhstan	KAZ
Kenya	KEN
Kyrgyz Republic	KGZ
Cambodia	KHM
Kiribati	KIR
St. Kitts and Nevis	KNA
Korea, Rep.	KOR
Kuwait	KWT
Latin America & Caribb	LAC
Lao PDR	LAO
Lebanon	LBN
Liberia	LBR
Libya	LBY
St. Lucia	LCA
Latin America & Caribb	LCN
Least developed countri	LDC
Low income	LIC
Liechtenstein	LIE
Sri Lanka	LKA
Lower middle income	LMC
Low & middle income	LMY
Lesotho	LSO
Late-demographic divid	LTE
Lithuania	LTU
Luxembourg	LUX
Latvia	LVA
Macao SAR, China	MAC
St. Martin (French part)	MAF
Morocco	MAR
Monaco	MCO
Moldova	MDA
Madagascar	MDG
Maldives	MDV
Middle East & North Afr	MEA
Mexico	MEX
Marshall Islands	MHL
Middle income	MIC
North Macedonia	MKD
Mali	MLI
Malta	MLT
Myanmar	MMR
Middle East & North Afr	MNA
Montenegro	MNE
Mongolia	MNG
Northern Mariana Islan	MNP
Mozambique	MOZ
Mauritania	MRT
Mauritius	MUS
Malawi	MWI
Malaysia	MYS
North America	NAC
Namibia	NAM
New Caledonia	NCL
Niger	NER
Nigeria	NGA
Nicaragua	NIC
Netherlands	NLD
Norway	NOR
Nepal	NPL
Nauru	NRU
New Zealand	NZL
OECD members	OED
Oman	OMN
Other small states	OSS
Pakistan	PAK
Panama	PAN
Peru	PER
Philippines	PHL
Palau	PLW
Papua New Guinea	PNG
Poland	POL
Pre-demographic divide	PRE
Puerto Rico	PRI
Korea, Dem. People's R	PRK
Portugal	PRT
Paraguay	PRY
West Bank and Gaza	PSE
Pacific island small stat	PSS
Post-demographic divid	PST
French Polynesia	PYF
Qatar	QAT
Romania	ROU
Russian Federation	RUS
Rwanda	RWA
South Asia	SAS
Saudi Arabia	SAU
Sudan	SDN
Senegal	SEN
Singapore	SGP
Solomon Islands	SLB
Sierra Leone	SLE
El Salvador	SLV
San Marino	SMR
Somalia	SOM
Serbia	SRB
Sub-Saharan Africa (exc	SSA
South Sudan	SSD
Sub-Saharan Africa	SSF
Small states	SST
Sao Tome and Principe	STP
Suriname	SUR
Slovak Republic	SVK
Slovenia	SVN
Sweden	SWE
Eswatini	SWZ
Sint Maarten (Dutch par	SXM
Seychelles	SYC
Syrian Arab Republic	SYR
Turks and Caicos Island	TCA
Chad	TCD
East Asia & Pacific (IDA	TEA
Europe & Central Asia (	TEC
Togo	TGO
Thailand	THA
Tajikistan	TJK
Turkmenistan	TKM
Latin America & the Car	TLA
Timor-Leste	TLS
Middle East & North Afr	TMN
Tonga	TON
South Asia (IDA & IBRD)	TSA
Sub-Saharan Africa (IDA	TSS
Trinidad and Tobago	TTO
Tunisia	TUN
Turkey	TUR
Tuvalu	TUV
Tanzania	TZA
Uganda	UGA
Ukraine	UKR
Upper middle income	UMC
Uruguay	URY
United States	USA
Uzbekistan	UZB
St. Vincent and the Gren	VCT
Venezuela, RB	VEN
British Virgin Islands	VGB
Virgin Islands (U.S.)	VIR
Vietnam	VNM
Vanuatu	VUT
World	WLD
Samoa	WSM
Kosovo	XKX
Yemen, Rep.	YEM
South Africa	ZAF
Zambia	ZMB
Zimbabwe	ZWE

This is the author's accepted manuscript without copyediting, formatting, or final corrections. It will be published in its final form in an upcoming issue of
The American Naturalist, published by The University of Chicago Press. Include the DOI when citing or quoting:
https://doi.org/10.1086/722797. Copyright 2022 The University of Chicago.

Country	Number of Lead Researchers	Percent of total
Argentina	22	3.264094955
Australia	36	5.341246291
Austria	12	1.78041543
Belgium	1	0.148367953
Brazil	91	13.50148368
Burkino Fasso	1	0.148367953
Canada	22	3.264094955
China	37	5.489614243
Columbia	8	1.18694362
Costa Rica	1	0.148367953
Cuba	1	0.148367953
Czech Republic	1	0.148367953
Denmark	4	0.59347181
Egypt	1	0.148367953
Finland	1	0.148367953
France	11	1.632047478
Germany	26	3.857566766
Ghana	1	0.148367953
Greece	2	0.296735905
Honduras	1	0.148367953
Hungary	1	0.148367953
India	10	1.483679525
Indonesia	2	0.296735905
Israel	1	0.148367953
Italy	6	0.890207715
Japan	19	2.818991098
Kenya	1	0.148367953
Malaysia	3	0.445103858
Martinique	1	0.148367953
Mexico	30	4.451038576
Netherlands	10	1.483679525
New Zealand	2	0.296735905
Pakistan	4	0.59347181
Panama	2	0.296735905
Peru	1	0.148367953
Phillipines	1	0.148367953
Poland	2	0.296735905
Puerto Rico	1	0.148367953
Scotland	2	0.296735905
South Africa	15	2.225519288
Spain	2	0.296735905
Sri Lanka	1	0.148367953
Sweden	4	0.59347181
Switzerland	7	1.038575668
Taiwan	5	0.741839763
Tanzania	1	0.148367953
Thailand	2	0.296735905
Trinidad	1	0.148367953
UK	34	5.044510386
Uruguay	7	1.038575668
USA	214	31.75074184
Venezuela	1	0.148367953
Zimbabwe	1	0.148367953
Total	**674**	

Temperate Country	Number of Lead Researchers	
Algeria	5	0.385802469
Argentina	14	1.080246914
Australia	46	3.549382716
Austria	8	0.617283951
Belgium	12	0.925925926
Brazil	1	0.077160494
Brunei	1	0.077160494
Bulgaria	2	0.154320988
Canada	97	7.484567901
Chile	2	0.154320988
China	30	2.314814815
Czech Republic	16	1.234567901
Denmark	7	0.540123457
England	6	0.462962963
Finland	16	1.234567901
France	55	4.24382716
Germany	58	4.475308642
Greece	8	0.617283951
Hungary	5	0.385802469
Iceland	1	0.077160494
India	1	0.077160494
Iran	4	0.308641975
Ireland	5	0.385802469
Israel	8	0.617283951
Italy	39	3.009259259
Japan	42	3.240740741
Kazakhstan	1	0.077160494
Kenya	1	0.077160494
Luxembourg	1	0.077160494
Mexico	1	0.077160494
Morocco	1	0.077160494
Netherlands	11	0.848765432
New Zealand	19	1.466049383
Norway	15	1.157407407
Poland	12	0.925925926
Portugal	9	0.694444444
Romania	3	0.231481481
Russia	9	0.694444444
Scotland	11	0.848765432
Serbia	1	0.077160494
Slovakia	1	0.077160494
Slovenia	2	0.154320988
South Africa	5	0.385802469
South Korea	3	0.231481481
Spain	55	4.24382716
Sweden	41	3.163580247
Switzerland	45	3.472222222
Taiwan	1	0.077160494
Turkey	6	0.462962963
UK	85	6.558641975
Ukraine	1	0.077160494
USA	466	35.95679012
Wales	1	0.077160494
Total	**1296**	

Total Country	Number of Researchers	Percent of Total
Algeria	5	0.257201646
Argentina	36	1.851851852
Australia	58	2.983539095
Austria	20	1.028806584
Belgium	13	0.66872428
Brazil	92	4.732510288
Brunei	1	0.051440329
Bulgaria	2	0.102880658
Burkino Fasso	1	0.051440329
Canada	119	6.121399177
Chile	2	0.102880658
China	67	3.446502058
Columbia	9	0.462962963
Costa Rica	1	0.051440329
Cuba	1	0.051440329
Czech Republic	17	0.874485597
Denmark	11	0.565843621
Egypt	1	0.051440329
England	6	0.308641975
Finland	17	0.874485597
France	66	3.395061728
Germany	84	4.320987654
Ghana	1	0.051440329
Greece	10	0.514403292
Honduras	1	0.051440329
Hungary	6	0.308641975
Iceland	1	0.051440329
India	11	0.565843621
Indonesia	2	0.102880658
Iran	4	0.205761317
Ireland	5	0.257201646
Israel	9	0.462962963
Italy	45	2.314814815
Japan	61	3.137860082
Kazakhstan	1	0.051440329
Kenya	2	0.102880658
Luxembourg	1	0.051440329
Malaysia	3	0.154320988
Martinique	1	0.051440329
Mexico	31	1.594650206
Morocco	1	0.051440329
Netherlands	21	1.080246914
New Zealand	21	1.080246914
Norway	15	0.771604938
Pakistan	4	0.205761317
Panama	2	0.102880658
Peru	1	0.051440329
Phillipines	1	0.051440329
Poland	14	0.720164609
Portugal	9	0.462962963
Puerto Rico	1	0.051440329
Romania	3	0.154320988
Russia	9	0.462962963
Scotland	13	0.66872428
Serbia	1	0.051440329
Slovakia	1	0.051440329
Slovenia	2	0.102880658
South Africa	20	1.028806584
South Korea	3	0.154320988
Spain	57	2.932098765
Sweden	45	2.314814815
Switzerland	52	2.674897119
Taiwan	6	0.308641975
Tanzania	1	0.051440329
Trinidad	1	0.051440329
Turkey	6	0.308641975
UK	119	6.121399177
Ukraine	1	0.051440329
Uruguay	7	0.360082305
USA	680	34.97942387
Venezuela	1	0.051440329
Wales	1	0.051440329
Zimbabwe	1	0.051440329
Total	1944	

Conflict Country	Number of Researchers
USA	15
Italy	1
Spain	3
Belgium	3
UK	7
Sweden	4
France	4
Australia	1
Switzerland	4
Spain	2
Hungary	1
Australia	3
Netherlands	1
Norway	2
Japan	3
Canada	5
Argentina	1
New Zealand	2
Slovakia	1
Mexico	1
Germany	2

This is the author's accepted manuscript without copyediting, formatting, or final corrections. It will be published in its final form in an upcoming issue of
The American Naturalist, published by The University of Chicago Press. Include the DOI when citing or quoting:
https://doi.org/10.1086/722797. Copyright 2022 The University of Chicago.

Dawson and Ryan	Central/South Am	University of texas	USA	no	2009	Early Experience L	Copeia	Eliminated, Manipulative study with no site description.
Zúñiga-vega, et al.	Mexico	Universidad Nacio	Mexico	no	2012	Intraspecific variat	Environmental Biology of Fishes	Eliminated - no repro focus
Tomlinson	NO ACCESS		UK	no	1989	Models of clines ir	Biological Journal of the Linnean Soci	ELIMINATED no access/ no info if they study wild organisms.
Seth, et al.					2020	Radiation biology	International Journal of Radiation Bic	ELIMINATED: Manipulative (radiation)
Delia, et al.	Mexico	Boston University	USA	no	2013	Rediscovery of 'los	Biodiversity & Conservation	Eliminated: Species discovery, no repro focus
Balolia, et al.	??	University college	UK	No	2013	Sexual Dimorphisr	International Journal of Primatology	ELIMINATED: Museum Records, no specificity of origin of samples.
Overduin-de Vries,	Biomedical Primat	Utrecht University	Netherlands	no	2015	Tactical deception	Behavioral Ecology and Sociobiology	Eliminated: Captive held animals and no description of origins.
Huckembeck, et al	Brazil	Universidade Fede	Brazil	no	2012	The activity patter	Brazilian Journal of Biology	Eliminated: habitat use and activity, No repro
Goenaga, et al.	Argentina	Universidad de Bu	Argentina	no	2012	The effect of matir	Evolutionary Ecology	ELiminated: Wild collected but then isofemale lines bred through 10 generations were used?
Maestripieri and G	Cayo Santiago	University of Chica	USA	No	2016	What Cortisol Can	American Journal of Primatology	Eliminated: Review. Not experimental?
Beaudrot, et al.		University of Calif	USA	No	2009	Why male orangu	Behavioral Ecology and Sociobiology	ELiminated: Review. Not experimental?
Yukilevich and Tru	Multiple: South ea	SUNY-Stony Brook	USA	no	2008	AFRICAN MORPHC	Evolution	ELiminated: Isofemale Lines, kept less than 2 years. More than 3 generations.
Molet, et al.	DUPLICATE	Universite´ Pierre e	France	No	2008	Shift in Colonial R	American Naturalist	

This is the author's accepted manuscript without copyediting, formatting, or final corrections. It will be published in its final form in an upcoming issue of
The American Naturalist, published by The University of Chicago Press. Include the DOI when citing or quoting:
https://doi.org/10.1086/722797. Copyright 2022 The University of Chicago.

Fitze, et al.	DUPLICATE				2005	CONFLICT OVER I	Evolution	
Yang, et al.	China	Anhui Agricultural	China	No	2011	COMPARATIVE M	The Florida Entomologist	Kept for "MANY" generations (ELIMINATED)
Yamane	Japan	Natl Agr & Food	Japan	No	2013	EFFECTS OF THE I	Entomological News	Eliminated
Araki, et al.	USA	Oregon State uni	USA	No	2007	Genetic Effects o	Science	Eliminated (Hatchery reared)
Fokkema, et al.	Netherlands	University of Gro	Netherlands	No	2017	Is parental comp	Ecology and Evolution	Eliminated Manipulative?
	DUPLICATE			No	1999	Male reproductiv	Molecular Ecology	
Byrne	Duplicate			No	2004	Male sperm expe	Behavioral Ecology	
Baylis, et al.	Falkland Islands	South Atlantic Em	Falklands	No	2016	Pup Vibrissae Sta	PLoS ONE	ELiminated (focuses on habitat use "foraging" in coastal and offshore habitats).
Gerhardt	No access/Site m	University of Mis	USA - MO	No	1994	Reproductive ch	Animal Behaviour	ELiminated (No access)
Hettyey and Pear	Duplicate			No	2003	Social environme	Behavioral Ecology	
Hissmann	No access/Site m	Max-Planck-Institut	Germany	No	1990	Strategies of mat	Ecological Entomology	Eliminated (no access)
Simmons	No access	University of Not	England	No	1988	The contribution	Ecological Entomology	Eliminated - no access
Johnson and Li		Duplicate		No	2010	Understanding b	Journal of Comparative Physiology	
Johnson and Li	Review	Michigan State U	USA - MI	No	2010	Understanding b	Journal of Comparative Physiology	Eliminated
Somiya and Tam	Marine (Eliminat	Nagasaki Univers	Japan	No	2017	Unraveling matir	Journal of Experimental Marine Biology & Ecology	
Ophir, et al.	USA-TN	University of Flor	USA	No	2008	Variation in neur	Proceedings of the National Acade	ELiminated
Bohn, et al.				No	2009	Versatility and St	PLoS One	
Fauvergue, et al.		INRA	France	No	2008	Virgins in the wi	Oecologia	ELIMINATED (200 Generations)
Grieves, et al.		DUPLICATE		No	2019	Wax Ester Comp	Journal of chemical ecology	
Górecka-Bruzda, et al.		Polish Academy o	Poland	No	2020	Welfare of Free-l	Animals	ELIMINATED (NOT REPRO FOCUSED)
Bush		University of Eas	England	No	1996	Why is double c	Animal Behaviour	ELIMINATED (captive colony)
Robertson and Cooke				No	1999	Winter philopatr	The Auk	Eliminated (review)
Goenaga, et al.	DUPLICATE				2015	Within-species d	BMC Evolutionary Biology	
Lee and Vaughan	USA - WV	Virginia Polytech	USA	No	2005	YEARLING AND S	Journal of Wildlife Management	Eliminated (No repro focus)
Fitze and Le Galli	France	University of Lau	Switzerland	No	2011	Inconsistency be	American Naturalist	Eliminated: No description of organism collection and manipulative study.
Stoks, et al.	Multiple (proble	Dartmouth Univ	USA - NH	No	2005	PARALLEL EVOLU	Evolution	Eliminated:No access to supplemental material that describes collection sites.
Lutterschmidt an	USA - GA	Portland Univers	USA - OR	No	2012	Sexually Dimorp	Brain, Behavior and Evolution	Eliminated: Manipulative study. Surgically implanted melatonin capsule.
Fiumera, et al.	USA - PA	Cornell Universit	USA - NY	No	2005	Sperm Competiti	Genetics	Eliminated - Wild derived, but manipulated lab lines
Bonar, M	Canada - Alberta	University of V	Canada	No	2016	The effect of terr	Ecology and Evolution	Juvenile Survival (repro?)