

# Perceptions by early career tropical researchers on the impact of COVID-19 six months into the pandemic

Jennifer Leigh Bradham<sup>1</sup>  | Maria Natalia Umaña<sup>2</sup> 

<sup>1</sup>Department of Environmental Studies, Wofford College, Spartanburg, SC, USA

<sup>2</sup>Department of Ecology and Evolutionary Biology, University of Michigan, Ann Arbor, MI, USA

## Correspondence

Jennifer Leigh Bradham, Department of Environmental Studies, Wofford College, Spartanburg, South Carolina, 29303, USA. Email: bradhamjl@wofford.edu

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## Abstract

The impacts of COVID-19 on early career tropical researchers are diverse and complex, including lack of funding opportunities, limitations to conducting fieldwork in remote places, reduced collaborations and networking, and difficulties when living and collecting data abroad. Here, we examine the current and future impacts of the COVID-19 pandemic on this population through a survey of 213 students and early career tropical researchers from around the world. As of September 2020, 55% of participants had already experienced financial repercussions due to the pandemic. Future worries were diverse and included equal concern regarding advancement (collaborations and networking), job uncertainty, fieldwork, and funding, as well as mental health concerns. Successful strategies to support student and early career researchers with regards to the pandemic should include mentoring from those in more advanced career positions on how to reframe research that is no longer feasible to complete as originally intended. Additionally, those responsible for hiring decisions should not penalize applicants for gaps in productivity during this time.

## KEYWORDS

COVID-19, early career, field-work, pandemic, student

## 1 | INTRODUCTION

The world is experiencing unprecedented changes as a consequence of the COVID-19 pandemic. By the end of 2020, over 83 million cases of the novel coronavirus had been reported worldwide and just under 2 million people had died from the virus (Worldometers.info, 2020). From repeated lockdown scenarios, social isolation, and negative financial effects, the impacts of this global pandemic have interrupted normal day-to-day operations for many citizens across the world (e.g. Ammar, 2020; Jiang et al., 2020). Professionally, this has meant everything from remote work or altered work hours, to layoffs or continuing to work in person despite the pandemic. Alterations in work structure provide a suite of challenges to all employed, but particularly early career researchers (graduate students, postdocs, those searching

for their first job, or those within the first five years of a position), as they face complex and long-lasting challenges. Those who graduate or begin careers during a recession see lower initial earnings and more frequent job switches (Oreopoulos et al., 2006), despite being highly skilled (Adda et al., 2013). Entering the job market during a recession can even have long-lasting negative health implications (Schwandt & VonWachter, 2020). As the top three countries in the world for number of COVID-19 cases and associated deaths (as of this writing) are either located in the tropics (Brazil and India) or have a large contingent of tropical researchers working and residing within the country (USA; Worldometers.info, 2020), the impacts of those living and working in the tropics are of particular concern. Here, we explore the extent to which the global pandemic has affected early career tropical researchers and describe their concerns for the future.

## 2 | METHODS

We surveyed 213 student and early career tropical researchers from around the world (Figure 1) in September 2020 to better understand the impacts of the COVID-19 pandemic on this group. A Google survey was disseminated to members of the Early Career Scientist Committee (ECSC) of the Association for Tropical Biology and Conservation (ATBC) who were encouraged to forward it on to peers who may not be ECSC members. In addition to logistical information such as career position and country of residence, the survey consisted of three possible questions and two follow-up questions. The first question and follow-up question asked participants to reflect on their current situation with regards to the global pandemic, while the second question and follow-up invited participants to express concerns regarding the future career impacts from the pandemic. The last question was open-ended and provided an opportunity to add any additional information on how participants had been affected by the pandemic. Exact phrasing of questions can be found in the Results and Discussion section. This study was exempt from review according to the Wofford College Institutional Review Board.

## 3 | RESULTS AND DISCUSSION

Participants were located in 58 different countries with 48% of participants identifying their country of residence as one of the following: United States (15%), Brazil (11%), Madagascar (11%), or India

(10%; Figure 1). Career stage of participants varied widely with just over half self-identifying as a “student” (undergraduate or graduate; Table 1). The “Researcher” category included respondents that were involved in research but did not identify as students, faculty, or post-docs, such as lab technicians, field researchers, and those working with NGOs.

### 3.1 | Current impacts

The COVID-19 pandemic has had a startling impact on the global economy, including a 5.2% contraction of global GDP, which could put millions into poverty or under serious financial strain (The World Bank, 2020). Therefore, the survey began by inquiring about the financial impacts of the global pandemic. When asked “Did you experience or are you experiencing financial repercussions associated with the COVID-19 global pandemic (e.g., loss of research funding, loss of salary, etc.)?”, 55% of participants indicated they had experienced a financial repercussion associated with the pandemic. Of those who responded yes, 19% of participants categorized the impacts as “high,” while 30% noted the impacts were “moderate,” and 8% referred to the financial impacts as “low.” Ninety-three percent of those that indicated a “high” impact identified as students (55%) or researchers (38%). As graduate students are arguably often paid low salaries and may already struggle to make ends meet financially (e.g., Flaherty, 2018), any financial repercussions associated with the pandemic may be exceptionally challenging to overcome. This may also be true for those with term-limited job contracts, such as researchers.

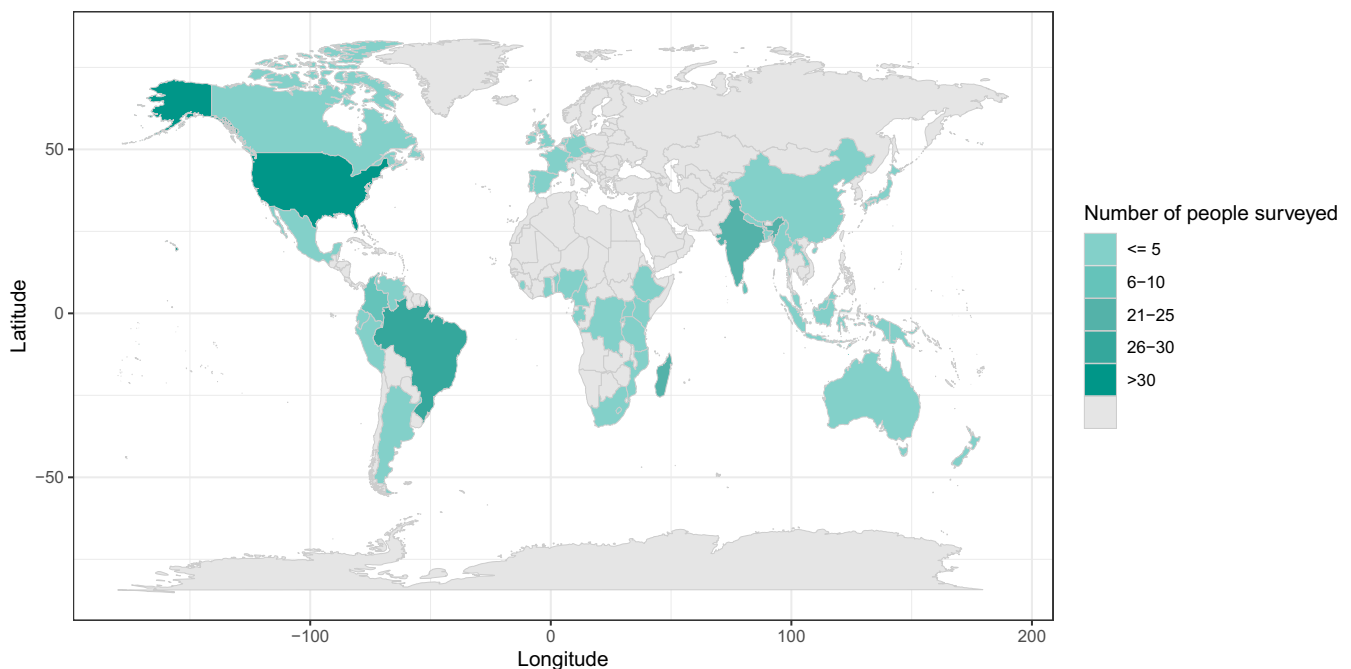


FIGURE 1 Countries of residence for survey participants

## 3.2 | Concerns

### 3.2.1 | Advancement and Career

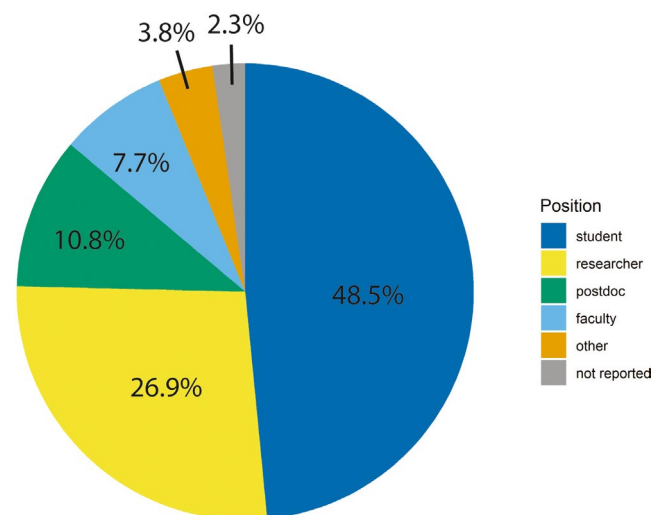
To the question “Do you feel like the COVID-19 pandemic will negatively impact your future career?”; 61% of respondents felt it would, while 39% of respondents did not feel the virus would have a negative impact on their career. Of those who believed it would negatively impact their future career, 86.2% of respondents were students, postdocs, or researchers (Figure 2). Those who answered “yes” to the question above were then asked “what are your biggest worries regarding your future career? How have these worries been exacerbated or mediated by the global pandemic?” Responses fell into five broad categories: publications and collaborations (hereafter “advancement”), job uncertainty (hereafter “career”), fieldwork, funding, and other. Concerns among the first four categories were similar among advancement, career, fieldwork, and funding (Figure 3). These results indicated the complexity and differential impacts of the pandemic for tropical researchers that resonated across multiple levels of their careers, and reinforced documented concerns regarding research and

future career prospects (Woolston, 2020b). The far-reaching impacts of the pandemic are broad and thus the response for tropical scientists must be equally broad, including but not limited to financial support.

With high unemployment rates in many countries (Falk et al., 2020) and hiring freezes in academia (Woolston, 2020a), future career options remain uncertain. A postdoc described the ramifications of hiring freezes: “I had been offered a tenure track position at an R1 university in early March, which I had negotiated and was prepared to accept. When COVID-19 school closures began [...], my hire was suspended due to a state mandated hiring freeze. I had to scramble to find a way to extend my postdoc funding past August because most of the other positions I had applied for also canceled their searches. It has been 6 months and a lot of these freezes haven't lifted yet. I'd like to be optimistic, but it is a challenge.” While the current job market is certainly stressful, country-specific responses to the pandemic may also influence future job prospects, as articulated by graduate student A from South America, “My biggest concern is the pandemic of disinformation that is spreading through some of the countries where I would consider finding jobs. That, allied with the economic consequences of the COVID-19 pandemic, makes me really concerned about the future of jobs and funding for an [already] competitive research area (ecology).”

**TABLE 1** Breakdown of participant responses when asked to list their job title or position

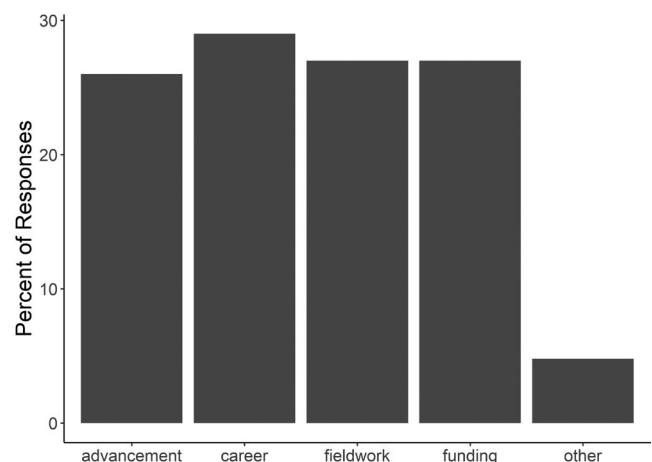
Position Category	Percent of Respondents
Student	51.6%
Researcher	23.5%
Faculty	10.3%
Postdoc	8.5%
Other	4.2%
Not reported	1.9%



**FIGURE 2** Breakdown of career positions for those who believe the global pandemic will negatively impact their future career

### 3.2.2 | Funding

As early grant acquisition can be key to successful future funding (Else, 2018), a lack of funding may increase already competitive funding opportunities (Jahnke, 2015). Some respondents had already experienced funding cuts, “The pandemic has led to huge funding cuts. That negatively influences the chances of not only receiving research grants but impacts travel grants as well. Also, needless to say, lesser research grants mean lesser number of PhD students [and] interns” [Junior Research Fellow from Asia], while others commented



**FIGURE 3** Percent of respondents citing concerns over the future career impacts of the global pandemic per category: Advancement (publications and collaborations), Career (job uncertainty), Fieldwork, Funding, and Other (including factors such as mental health concerns)

on future funding concerns “*The pandemic pose[s] a threats to international scholarships and funding opportunities for scholars in developing countries*” [Early Career Professor from Africa].

### 3.2.3 | Fieldwork

Fieldwork is fundamental to most tropical research, as evidenced by 27% of respondents who cited fieldwork concerns associated with the pandemic (Figure 3). Many tropical researchers, the authors of this study included, have scrambled to alter research agendas due to border closures and funding freezes preventing essential travel for fieldwork. An early career professor in Asia explained: “*Our fieldwork was interrupted and this will affect future research output/career prospects. Some projects had to be even terminated. It is not clear how funding organizations & universities will react to these changes. I think in most cases it will not be possible to meet the deadlines set prior to the pandemic.*” The inability to complete field research projects has created concern regarding future job prospects, as expressed by graduate student B in South America who noted the cascading effects of impaired field research “*[r]educed funding for field data collection, reduced encouragement to carry out international collaborations, reduced post-doc opportunities for foreigners.*” Some of the challenges of conducting fieldwork during a global pandemic can be exacerbated by those working in remote tropical areas, as explained by graduate student A from Asia: “*I was doing fieldwork in the tropical rain forests [...] when the pandemic struck. Because of COVID-19, I had to spend more than three months unnecessarily at a field station without any infrastructure to write my thesis and unable to contact my professor*” and from a graduate student in North America: “*I was repatriated while working on my project through [a term limited] scholarship. It was an awful experience. All of my samples are sitting in [the country I was working in] waiting for me to return, and my [scholarship] has expired.*”

### 3.2.4 | Life Work Balance

Finally, we invited participants to share any additional experiences they had regarding the pandemic. Out of the 205 responses to this optional question, balancing life and work obligations was a recurring theme. Globally, schools have closed which has forced parents to care for children while working at home (Anwar, 2020). Some of our respondents articulated these challenges, “*The COVID-19 global pandemic strongly affects the time I can dedicate to work since I have a 2-y old child at home. I can only work less than 50% of time than I usually do and I have actually more work than usual due to my [role]. Therefore, my capacity to supervise correctly my students and to work on ongoing manuscripts [has] decreased a lot during the pandemic*” [Assistant Professor in South America]. Multiple respondents also mentioned mental health concerns. As a result of increased self-isolation, quarantine, fear, and anxiety among many other things, mental health concerns are now among the foremost public health concerns in the world (Khan et al., 2020), particularly for graduate

students (Ro, 2020; Woolston, 2020c). We also saw these same patterns in the student and early career researchers surveyed, with graduate student B from Asia sharing “*Serious mental stress, forcing me into therapy.*”

### 3.2.5 | Unexpected Benefits

While the majority of responses to this open-ended question were examples of the negative impacts of COVID-19, about 6% of participants highlighted positive outcomes or silver linings of the global pandemic. For example, a researcher in Asia received more publication views and there has been increased access to scientific knowledge with the transition to virtual communication, as explained by graduate student C from South America: “*An unexpected turnout of events is that online conferences were widely organized to be accessible for scientists and students worldwide. Particularly for researchers from less developed countries, who otherwise wouldn't be able to participate in huge international gatherings.*” This sentiment was echoed by graduate student D in South America: “*I think the global pandemic enhanced the accessibility to scientific knowledge in a better way and it allowed that importance of science for society was more notable, especially in less developed countries.*”

## 3.3 | Conclusions

As the tropics experience the highest levels of deforestation and extinction rates in the world (Alroy, 2017; Hansen et al., 2013, 2020; Vamosi & Vamosi, 2008), increasing levels of deforestation and extinction may make future pandemics more likely (Tollefson, 2020). Tropical biology and conservation research includes mitigating interactions between human and wildlife populations to prevent emergent diseases like COVID-19. Clearly, more research is need to prevent similar outbreaks in future, yet current research and travel restrictions make this difficult. The current challenges that the pandemic poses for research reverberates throughout the tropical biology and conservation community and is perceived as particularly detrimental to advancement for those early in their careers. Therefore, supporting early career and student researchers is critical to continuing the essential work done by tropical scientists. Those in more developed stages of their career should serve as mentors for student and early career researchers to help with reframing existing research that may no longer be feasible as originally conceived. When possible, PIs and universities should extend funding and provide additional time for completion of degrees for current students. Universities should also offer extensions for faculty in their probationary periods. Additionally, when evaluating employment documents for advancement (e.g., Masters to PhD or as a faculty hire), reviewers should consider the challenges faced by this group and interpret gaps in research productivity during this time, particularly from those researchers containing a strong field component in their work, within an appropriate context.

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## ORCID

Jennifer Leigh Bradham  <https://orcid.org/0000-0002-9208-9051>

Maria Natalia Umaña  <https://orcid.org/0000-0001-5876-7720>

## REFERENCES

- Adda, J., Dustmann, C., Meghir, C., & Robin, J.-M. (2013). *Career Progression, Economic Downturns, and Skills*. Natl. Bur. Econ. Res. Work. Pap. Ser., 1–62. Available at: [https://www.nber.org/system/files/working\\_papers/w18832/w18832.pdf](https://www.nber.org/system/files/working_papers/w18832/w18832.pdf)
- Alroy, J. (2017). Effects of habitat disturbance on tropical forest biodiversity. *Proceedings of the National Academy of Sciences*, 114, 6056–6061. <https://doi.org/10.1073/pnas.1611855114>
- Ammar, A., Chtourou, H., Boukhris, O., Trabelsi, K., Masmoudi, L., Brach, M., Bouaziz, B., Bentlage, E., How, D., Ahmed, M., Mueller, P., Mueller, N., Hsouna, H., Aloui, A., Hammouda, O., Paineiras-Domingos, L. L. et al (2020). COVID-19 home confinement negatively impacts social participation and life satisfaction: A worldwide multicenter study. *International Journal of Environmental Research and Public Health*, 17, 1–17.
- Anwar, M. (2020). *Academic labor and the global pandemic: revisiting life-work balance under COVID-19*. Susan Bulkeley Butl. Cent. Leadersh. Excell. Adv. Work. Pap. Ser., 3, 5–13.
- Else, H. (2018). Scientists' early grant success fuels further funding news. *Nature*, 556, 416–417. <https://doi.org/10.1038/d41586-018-04958-9>
- Falk, G., Carter, J., Nicchitta, I., Nyhof, E., & Romero, P. (2020). *Unemployment Rates During the COVID-19 Pandemic*. In Brief Available at: <https://crsreports.congress.gov>
- Flaherty, C. (2018). *Grad students' fight for \$15*. Insid. High. Ed. Available at: <https://www.insidehighered.com/news/2018/10/26/graduate-student-assistants-campus-across-us-are-pushing-15-hour-what-they-call>
- Hansen, M. C., Potapov, P. V., Moore, R., Hancher, M., Turubanova, S. A., Tyukavina, A., Thau, D., Stehman, S. V., Goetz, S. J., Loveland, T. R., Kommareddy, A., Egorov, A., Chini, L., Justice, C. O., & Townshend, J. R. G. (2013). High-resolution global maps of 21st-century forest cover change. *Science*, 342, 850–853. <https://doi.org/10.1126/science.1244693>
- Hansen, M. C., Wang, L., Song, X. P., Tyukavina, A., Turubanova, S., Potapov, P. V., & Stehman, S. V. (2020). The fate of tropical forest fragments. *Science Advances*, 6, 1–10. <https://doi.org/10.1126/sciadv.aax8574>
- Jahnke, A. (2015). *Who picks up the tab for science? The Brink*. Available at: <http://www.bu.edu/articles/2015/funding-for-scientific-research/>
- Jiang, X., Lozano, F., & Schmutte, I. M. (2020). *Determinants of Disparities in COVID-19 Job Losses*. Natl. Bur. Econ. Res. Work. Pap. Ser. Working pa: 1689–1699. Available at: [https://www.researchgate.net/profile/Xuan\\_Jiang31/publication/341626608\\_DETERMINANTS\\_OF\\_DISPARITIES\\_IN\\_COVID-19\\_JOB\\_LOSSES/links/5ecc4cf0a6fdcc90d6999319/DETERMINANTS-OF-DISPARITIES-IN-COVID-19-JOB-LOSSES.pdf](https://www.researchgate.net/profile/Xuan_Jiang31/publication/341626608_DETERMINANTS_OF_DISPARITIES_IN_COVID-19_JOB_LOSSES/links/5ecc4cf0a6fdcc90d6999319/DETERMINANTS-OF-DISPARITIES-IN-COVID-19-JOB-LOSSES.pdf)
- Khan, K. S., Mamun, M., Griffiths, M., & Ullah, I. (2020). The mental health impact of COVID-19 across different cohorts. *International Journal of Mental Health and Addiction*. <https://doi.org/10.1007/s11469-020-00367-0>
- Oreopoulos, P., von Wachter, T., & Heisz, A. (2006). The Short-and Long-Term Career Effects of Graduating in a Recession: Hysteresis and Heterogeneity in the market for college graduates. *American Economic Journal: Applied Economics*, 212, 1–74.
- Ro, C. (2020). Pandemic harms Canadian grad students' research and mental health. *Nature*, <https://doi.org/10.1038/d41586-020-02441-y>
- Schwandt, H., & VonWachter, T. M. (2020). *Socioeconomic Decline and Death: Midlife Impacts of Graduating in a Recession*. Natl. Bur. Econ. Res. Work. Pap. Ser. No. 26638. Available at: [http://www.econ.ucla.edu/tvwachter/papers/Unlucky\\_Midlife\\_2019\\_11\\_11.pdf](http://www.econ.ucla.edu/tvwachter/papers/Unlucky_Midlife_2019_11_11.pdf)
- The World Bank (2020). *Global Economic Prospects*.
- Tollefson, J. (2020). Why deforestation and extinctions make pandemics more likely. *Nature*, 584, 175–176. <https://doi.org/10.1038/d41586-020-02341-1>
- Vamosi, J. C., & Vamosi, S. M. (2008). Extinction risk escalates in the tropics. *PLoS One*, 3, 8–13. <https://doi.org/10.1371/journal.pone.0003886>
- Woolston, C. (2020a). Junior researchers hit by coronavirus-triggered hiring freezes. *Nature*, 582, 449–450. <https://doi.org/10.1038/d41586-020-01656-3>
- Woolston, C. (2020b). Pandemic darkens postdocs' work and career hopes. *Nature*, 585, 309–312. <https://doi.org/10.1038/d41586-020-02548-2>
- Woolston, C. (2020c). Signs of depression and anxiety soar among US graduate students during pandemic. *Nature*, 585, 147–148. <https://doi.org/10.1038/d41586-020-02439-6>
- Worldometers.info. (2020). *Coronavirus*. Available at: <https://www.worldometers.info/coronavirus/> [Accessed December 31, 2020].

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