

## LETTER

# Tropical field stations yield high conservation return on investment

Timothy M. Eppley<sup>1,2,3,4</sup>  | Kim E. Reuter<sup>4,5,6</sup> | Timothy M. Sefczek<sup>4,7,8</sup>  |  
 Jen Tinsman<sup>4,8,9</sup>  | Luca Santini<sup>10</sup>  | Selwyn Hoeks<sup>11</sup>  |  
 Seheno Andriantsaralaza<sup>4,5</sup> | Sam Shanee<sup>4,12,13</sup>  | Anthony Di Fiore<sup>14,15</sup>  |  
 Joanna M. Setchell<sup>4,16</sup>  | Karen B. Strier<sup>4,17</sup>  | Peter A. Abanyam<sup>4,18</sup> |  
 Aini Hasanah Abd Mutalib<sup>4,19</sup>  | Ekwoke Abwe<sup>3,4,20</sup> | Tanvir Ahmed<sup>4,21</sup>  |  
 Marc Ancrenaz<sup>4,22,23</sup>  | Raphali R. Andriantsimanarilafy<sup>24</sup>  | Andie Ang<sup>4,25</sup>  |  
 Filippo Aureli<sup>4,26,27</sup>  | Louise Barrett<sup>28,29</sup>  | Jacinta C. Beehner<sup>4,30,31</sup>  |  
 Marcela E. Benítez<sup>32</sup>  | Bruna M. Bezerra<sup>4,33</sup>  | Júlio César Bicca-Marques<sup>4,34</sup>  |  
 Dominique Bikaba<sup>35</sup>  | Robert Bitariho<sup>36</sup>  | Christophe Boesch<sup>4,37</sup>  |  
 Laura M. Bolt<sup>4,38,39</sup>  | Ramesh Boonratana<sup>4,40</sup>  | Thomas M. Butynski<sup>4,41,42</sup> |  
 Gustavo R. Canale<sup>4,43,44</sup>  | Susana Carvalho<sup>45,46</sup>  | Colin A. Chapman<sup>4,47</sup>  |  
 Dilip Chetry<sup>4,48</sup>  | Susan M. Cheyne<sup>4,49,50</sup>  | Marina Cords<sup>4,51</sup>  |  
 Fanny M. Cornejo<sup>4,52</sup>  | Liliana Cortés-Ortiz<sup>4,53</sup>  | Camille N. Z. Coudrat<sup>4,54</sup>  |  
 Margaret C. Crofoot<sup>55,56,57</sup>  | Drew T. Cronin<sup>4,58</sup>  | Alvine Dadjo<sup>59</sup> |  
 S. Chrystelle Dakpogan<sup>4,60</sup> | Emmanuel Danquah<sup>61</sup>  | Tim R. B. Davenport<sup>4,62</sup>  |  
 Yvonne A. de Jong<sup>4,41,42</sup>  | Stella de la Torre<sup>4,15,63</sup>  | Andrea Dempsey<sup>4,64</sup>  |  
 Judeline C. Dimalibot<sup>65</sup> | Rainer Dolch<sup>4,66</sup> | Giuseppe Donati<sup>4,49</sup>  |  
 Alejandro Estrada<sup>4,67</sup>  | Rassina A. Farassi<sup>68,69</sup> | Peter J. Fashing<sup>4,70,71</sup>  |  
 Eduardo Fernandez-Duque<sup>4,72</sup>  | Maria J. Ferreira da Silva<sup>4,73,74,75</sup>  |  
 Julia Fischer<sup>76,77</sup>  | César F. Flores-Negrón<sup>78</sup>  | Barbara Fruth<sup>4,79</sup>  |  
 Terence Fuh Neba<sup>4,80</sup>  | Lief Erikson Gamalo<sup>4,81</sup>  | Jörg U. Ganzhorn<sup>4,82</sup>  |  
 Paul A. Garber<sup>83,84</sup>  | Smitha D. Gnanaolivu<sup>4,85,86</sup>  | Mary Katherine Gonder<sup>4,87</sup>  |  
 Sery Ernest Gonedelé Bi<sup>4,88,89</sup>  | Benoît Goossens<sup>4,90,91</sup>  | Marcelo Gordo<sup>4,92,93</sup>  |  
 Juan M. Guayasamin<sup>94,95</sup>  | Diana C. Guzmán-Caro<sup>4,96</sup>  | Andrew R. Halloran<sup>4,97,98</sup> |  
 Jessica A. Hartel<sup>99,100,101</sup> | Eckhard W. Heymann<sup>4,102</sup>  | Russell A. Hill<sup>16,103</sup>  |  
 Kimberley J. Hockings<sup>4,104</sup>  | Gottfried Hohmann<sup>37,79</sup> | Naven Hon<sup>105</sup> |  
 Mariano G. Houngbédji<sup>4,60,106</sup>  | Michael A. Huffman<sup>4,107</sup>  | Rachel A. Ikemeh<sup>4,108</sup> |

Timothy M. Eppley, Kim E. Reuter, Timothy M. Sefczek, and Jen Tinsman contributed equally to this work.

Patricia C. Wright and Russell A. Mittermeier contributed equally to this work.

This is an open access article under the terms of the [Creative Commons Attribution License](https://creativecommons.org/licenses/by/4.0/), which permits use, distribution and reproduction in any medium, provided the original work is properly cited.

© 2024 The Authors. *Conservation Letters* published by Wiley Periodicals LLC.

Inaoyom Imong<sup>4,109</sup> | Mitchell T. Irwin<sup>4,110,111</sup>  | Patricia Izar<sup>4,112</sup>  |  
 Leandro Jerusalinsky<sup>4,113</sup>  | Gladys Kalema-Zikusoka<sup>4,114</sup>  |  
 Beth A. Kaplin<sup>4,115,116</sup>  | Peter M. Kappeler<sup>4,102,117</sup>  | Stanislaus M. Kivai<sup>4,118</sup> |  
 Cheryl D. Knott<sup>4,119,120</sup>  | Intanon Kolasartsanee<sup>4,121</sup> | Kathelijne Koops<sup>4,122</sup>  |  
 Martin M. Kowalewski<sup>4,123</sup>  | Deo Kujirakwinja<sup>4,109,124</sup>  | Ajith Kumar<sup>4,125,126</sup> |  
 Quyet K. Le<sup>4,127</sup>  | Rebecca J. Lewis<sup>4,14,128</sup>  | Aung Ko Lin<sup>4,129</sup> |  
 Andrés Link<sup>4,130,131</sup>  | Luz I. Loría<sup>4,132,133</sup>  | Menladi M. Lormie<sup>4,134</sup>  |  
 Edward E. Louis Jr.<sup>4,8,135</sup>  | Ngwe Lwin<sup>4,129</sup>  | Fiona Maisels<sup>4,136,137</sup>  |  
 Suchinda Malaivijitnond<sup>4,138,139</sup>  | Lesley Marisa<sup>4,140</sup> | Gráinne M. McCabe<sup>4,141</sup>  |  
 W. Scott McGraw<sup>4,142</sup>  | Addisu Mekonnen<sup>4,143,144</sup>  |  
 Pedro G. Méndez-Carvajal<sup>4,132,145</sup>  | Tânia Minhos<sup>146,147</sup>  | David M. Montgomery<sup>148</sup> |  
 Citlalli Morelos-Juárez<sup>4,149</sup>  | Bethan J. Morgan<sup>3,4,20,137</sup>  | David Morgan<sup>4,150</sup>  |  
 Amancio Motove Etingüe<sup>151</sup> | Papa Ibnou Ndiaye<sup>4,152</sup>  |  
 K. Anne-Isola Nekaris<sup>4,153,154</sup>  | Nga Nguyen<sup>70,71</sup> | Vincent Nijman<sup>4,49,155</sup>  |  
 Radar Nishuli<sup>4,156</sup> | Marilyn A. Norconk<sup>157</sup>  | Luciana I. Oklander<sup>4,158,159</sup>  |  
 Rahayu Oktaviani<sup>4,160,161</sup>  | Julia Ostner<sup>162,163</sup>  | Emily Otali<sup>4,164,165</sup>  |  
 Susan E. Perry<sup>166</sup>  | Eduardo J. Pinel Ramos<sup>26</sup> | Leila M. Porter<sup>4,110</sup>  |  
 Jill D. Pruetz<sup>167</sup>  | Anne E. Pusey<sup>168</sup>  | Helder L. Queiroz<sup>169</sup>  |  
 Mónica A. Ramírez<sup>4,170</sup>  | Guy Hermas Randriatahina<sup>4,171</sup> | Hoby Rasoanaivo<sup>5</sup>  |  
 Jonah Ratsimbazafy<sup>4,172</sup> | Joelisoa Ratsiraron<sup>4,173</sup> | Josia Razafindramanana<sup>4,174,175</sup> |  
 Onja H. Razafindratsima<sup>4,176</sup>  | Vernon Reynolds<sup>4,177,178</sup>  | Rizaldi Rizaldi<sup>4,179</sup>  |  
 Martha M. Robbins<sup>4,37</sup>  | Melissa E. Rodríguez<sup>4,180</sup>  | Marleny Rosales-Meda<sup>4,181</sup> |  
 Crickette M. Sanz<sup>4,182,183</sup> | Dipto Sarkar<sup>184</sup>  | Anne Savage<sup>4,185</sup>  |  
 Amy L. Schreier<sup>39,186</sup>  | Oliver Schülke<sup>162,163</sup>  | Gabriel H. Segniagbeto<sup>4,187,188</sup>  |  
 Juan Carlos Serio-Silva<sup>4,189</sup>  | Arif Setiawan<sup>4,190</sup>  | John Seyjagat<sup>191,192</sup> |  
 Felipe E. Silva<sup>4,169,193</sup>  | Elizabeth M. Sinclair<sup>194,195</sup> | Rebecca L. Smith<sup>4,196</sup>  |  
 Denise Spaan<sup>26,197</sup>  | Fiona A. Stewart<sup>4,27,198</sup>  | Shirley C. Strum<sup>4,199,200</sup>  |  
 Martin Surbeck<sup>37,201</sup>  | Magdalena S. Svensson<sup>4,49</sup>  | Mauricio Talebi<sup>4,202,203</sup>  |  
 Luc Roscelin Tédonzong<sup>4,204,205</sup>  | Bernardo Urbani<sup>4,102,206</sup>  | João Valsecchi<sup>207,208</sup>  |  
 Natalie Vasey<sup>2</sup>  | Erin R. Vogel<sup>209,210</sup>  | Robert B. Wallace<sup>4,211</sup>  |  
 Janette Wallis<sup>4,212</sup> | Siân Waters<sup>4,16,213</sup>  | Roman M. Wittig<sup>4,214,215</sup>  |  
 Richard W. Wrangham<sup>4,216</sup>  | Patricia C. Wright<sup>4,217,218</sup>  |  
 Russell A. Mittermeier<sup>4,219</sup> 

#### Correspondence

Timothy M. Eppley, Wildlife Madagascar,  
 Antananarivo, Madagascar.  
 Email: [eppleyti@gmail.com](mailto:eppleyti@gmail.com)

#### Abstract

Conservation funding is currently limited; cost-effective conservation solutions are essential. We suggest that the thousands of field stations worldwide can play key roles at the frontline of biodiversity conservation and have high intrinsic

value. We assessed field stations' conservation return on investment and explored the impact of COVID-19. We surveyed leaders of field stations across tropical regions that host primate research; 157 field stations in 56 countries responded. Respondents reported improved habitat quality and reduced hunting rates at over 80% of field stations and lower operational costs per km<sup>2</sup> than protected areas, yet half of those surveyed have less funding now than in 2019. Spatial analyses support field station presence as reducing deforestation. These "earth observatories" provide a high return on investment; we advocate for increased support of field station programs and for governments to support their vital conservation efforts by investing accordingly.

#### KEYWORDS

biodiversity, climate change, conservation funding, field stations, pandemic, primate-range countries, protected areas, return on investment, sustainability

## INTRODUCTION

Funding for global biodiversity conservation, already a finite commodity, has been impacted by the COVID-19 pandemic (Gibbons et al., 2022). Despite trillions of USD mobilized in pandemic economic recovery, government resources to address the biodiversity and climate crises remain constrained, even though increased investment is urgently required (Mallapaty et al., 2022). In this context, governments and other funding agencies should adopt policies that must consider not just the quantum of biodiversity and climate finance mobilized, but also their conservation return on investment (CROI): a quantitative, and sometimes also qualitative, conservation outcome measured against the fiscal cost of providing that outcome (Cho et al., 2019).

Thousands of field research stations worldwide are at the frontline of biodiversity conservation, supporting significant advances in conservation, education, and research. Despite monitoring and reporting on critical ecosystem services, their value to national and international biodiversity conservation efforts is often not recognized (Eppley et al., 2022; NRC, 2014; Wyman et al., 2009). This lack of recognition of field stations is evidenced by reduced investment and funding cuts in the conservation sector since the COVID-19 pandemic began (Gibbons et al., 2022; Likens & Wagner, 2021; McCleery et al., 2020).

Field stations may be susceptible to funding cuts because the CROI of these entities is not well-understood or documented, and therefore difficult to assess. For example, conservation and research initiatives, particularly at field stations, are usually interdisciplinary, yielding a broad array of direct and indirect knowledge and data benefits

that are often only realized over long time scales, making CROI multifaceted and more complex than typical cost-benefit analyses can capture (Boyd et al., 2015; Field & Elphick, 2019; Kujala et al., 2018). CROI analyses often focus on the cost of protecting a given, measurable area (Kujala et al., 2018), yet field stations in these areas enact a multiplicity of qualitative initiatives, including research, education, and public engagement, that have long-term objectives and little immediately measurable cost-benefit value (Tydecks et al., 2016). It is this foundation of difficult-to-quantify conservation outcomes that field stations need to use to demonstrate their true benefit-to-cost ratio (Cho et al., 2019).

Focusing on field stations in primate-range countries, we take stock of field stations' CROI and explore the impact of the pandemic on their work. Specifically, we assess the real and perceived impact of the pandemic on field stations across the global tropics and subtropics, while also quantitatively evaluating the importance of these sites to biodiversity conservation. We use both traditional measures of CROI, that is, forest area protected and species biodiversity incorporated, and nonquantitative measures of conservation success, such as variation in patronage of field stations, variability in research programs, job creation, and development of long-term datasets, to demonstrate the cost-effectiveness of conservation investment in field stations.

## METHODS

We defined field stations as sites with permanent structure(s) owned, rented, or occupied by an institution or research group. Our field station definition was

intentionally broad as we aimed to incorporate a wide range of field stations, including large, well-established multifunction institutions, to small sites managed by an individual research team.

Given the lack of an existing database for field stations (cf. Tydecks et al., 2016), we targeted field research stations in primate-range countries. Primates are a well-studied and diverse taxonomic order distributed throughout ~90 countries (Mittermeier et al., 2013) and are often considered important species critical to tropical ecosystem function (Chapman et al., 2017; Estrada et al., 2017). As such, using established primate research networks provided a suitable forum for surveying a range of field stations across a large number of tropical countries.

## Questionnaire survey

We recruited individuals with leadership roles (e.g., Director/Manager; Principal Investigator; long-term personnel at the site) at field stations via direct email contact. We used several email lists and publicly available contact information, including (1) current or former members of the IUCN SSC Primate Specialist Group (PSG), a group of more than 700 experts across the world, and members of primatological societies affiliated with the International Primatological Society; (2) contact points for Herbariums (<https://sweetgum.nybg.org/science/ih/>); (3) contact points for field stations on the Association for Tropical Biology and Conservation website; and (4) contact points for field stations with membership in the International Organization of Biological Field Stations.

The survey was conducted between late March and early June 2022 and was available in English, French, and Spanish. The 70-question survey solicited both objective (e.g., location) and subjective (e.g., risks to field stations' perpetuity, likelihood of closure, impact of conservation programs) information about field stations (see Appendices S1 and S2 for survey background and questionnaire).

Finally, we present an estimated median annual cost for operating field stations. Assuming a 5-km radius of direct field station effect on biodiversity (Campbell et al., 2011; Wintle et al., 2019), each field station impacts 78.54 km<sup>2</sup> of habitat. We divided the median annual budget of field stations surveyed by this assumed area of direct impact. As with any social survey extrapolation, these data should be treated as estimates of the quantified benefits and costs of field stations, particularly as the scale of "direct field station effect" can vary across different contexts and species.

## Spatial analysis

To quantify the impact of field stations on species conservation, we estimated the number of species ranges intersecting field stations using IUCN Red List for Threatened Species range maps (version 2022.1; IUCN, 2022) for all terrestrial tetrapods assessed as threatened (i.e., Critically Endangered, Endangered, or Vulnerable), non-threatened (Least Concern, Near Threatened), and data deficient. We calculated the number of species per taxonomic group with geographic ranges overlapping field station locations per region. We then summarized the total number of species per taxon covered by field stations in different continents and by Red List category, while accounting for duplicates across field sites. This approach leads to an overestimate of species occurring at each site since geographic range maps can include unsuitable habitats for the species (Rondinini et al., 2006). However, this problem is likely mitigated by the aggregation of data across many field stations covering diverse habitats (i.e., a species not occurring in one field station can be present in others within its range). This analysis serves as a coarse estimate of the proportion of species with a threatened or data deficient status over the total (including non-threatened species) intersecting with the field stations in our study.

To evaluate whether field stations prevent forest cover loss, we documented changes in forest cover loss over time both at field stations and at similar, nearby areas outside of field stations' influence (i.e., control points). We randomly sampled these potential control points from a donut-shaped band at least 5 km from the field station, but not farther than 50 km (Figure S1). From these potential control points, we selected the 10 points that were most similar to the field station with respect to several environmental and anthropogenic conditions: initial tree cover, protection status, temperature, precipitation, human population density, anthropogenic modification, and road density, using statistical matching (Andam et al., 2008; Joppa & Pfaff, 2011; Stuart et al., 2011; Sze et al., 2022). See Appendix S3 for full methods, variable names, and sources. We then used the Global Forest Change index v1.8 (Hansen et al., 2013) to quantify differences in forest cover loss between field stations and the mean of their 10 matched controls, weighted to increase the contributions of the control points most similar to the field station, over time (Appendix S3). This satellite-derived forest cover loss data are available for the years 2000–2020 (Hansen et al., 2013). Thus, we measured the total forest cover loss between the field station's specific founding year or from 2000, whichever was later, and until 2020, that is, the most recent year available.

## RESULTS

Respondents provided information on 157 field stations in 56 countries, representing 62% of the 90 countries in which primates naturally occur. Each major geographic region where primates occur was represented: 28% of these field stations were in Central and South America, 52% in Africa, and 20% in Asia. Eighty-five percent of all field stations ( $n = 145$ ) were located in, or adjacent to, a formally protected area. At the time of the survey, most field stations (93% of  $n = 145$ ) were still operating and had been in existence for an average of  $22 \pm 2.4$  years (mean  $\pm$  95% confidence interval, range: 0–97 years,  $n = 154$  stations).

### Conservation, livelihoods, and research supported by field stations

Most survey respondents were of the opinion that, in comparison to other areas of the country where there were no field stations, the presence of a field station improved the habitat quality of the surrounding area (83% of  $n = 153$  stations), reduced rates of hunting (86% of  $n = 147$  stations), and improved enforcement of the law with regard to wildlife use/extraction (67% of  $n = 148$  stations; Figure 1a–c). Almost all field stations surveyed had at least one full-time staff member (93% of  $n = 149$  stations), with nearly half having between 5 and 75 staff (Figure 1e). Furthermore, 93% of field stations ( $n = 144$  stations) hired locals. Almost all (98%) of the field stations were used by researchers ( $n = 151$  stations; Figure 1f). In a normal (pre-COVID-19) year, the field stations were collectively used by ~725–3315 researchers, with most field stations hosting researchers from two to five countries. Field stations were also used by students (83%), volunteers (60%), trainees or apprentices (47%), tourists and the general public (36%), and patrol guards, rangers, or other park authorities (11%). In a typical year, the field stations ( $n = 142$ ) surveyed here received a total of ~11,055–18,950 visitors from the general public, excluding outliers (i.e., a few field stations were on sites receiving tens of thousands of visitors per year; Figure 1g). The total number of scientific articles published across 150 of the field stations in a typical year ranged from ~330 to 1255 papers (Figure 1h).

Almost all field stations surveyed (97% of  $n = 141$  stations) collected long-term data (Figure 1d), with one out of five (19% of  $n = 142$  stations) sharing all their long-term datasets publicly and another 11% sharing some datasets publicly. In addition to primate research, field stations hosted research on  $4.2 \pm 0.3$  other taxonomic groups or ecological disciplines ( $n = 140$  stations; Figure 1i).

### The effect of field stations on biodiversity and forest cover

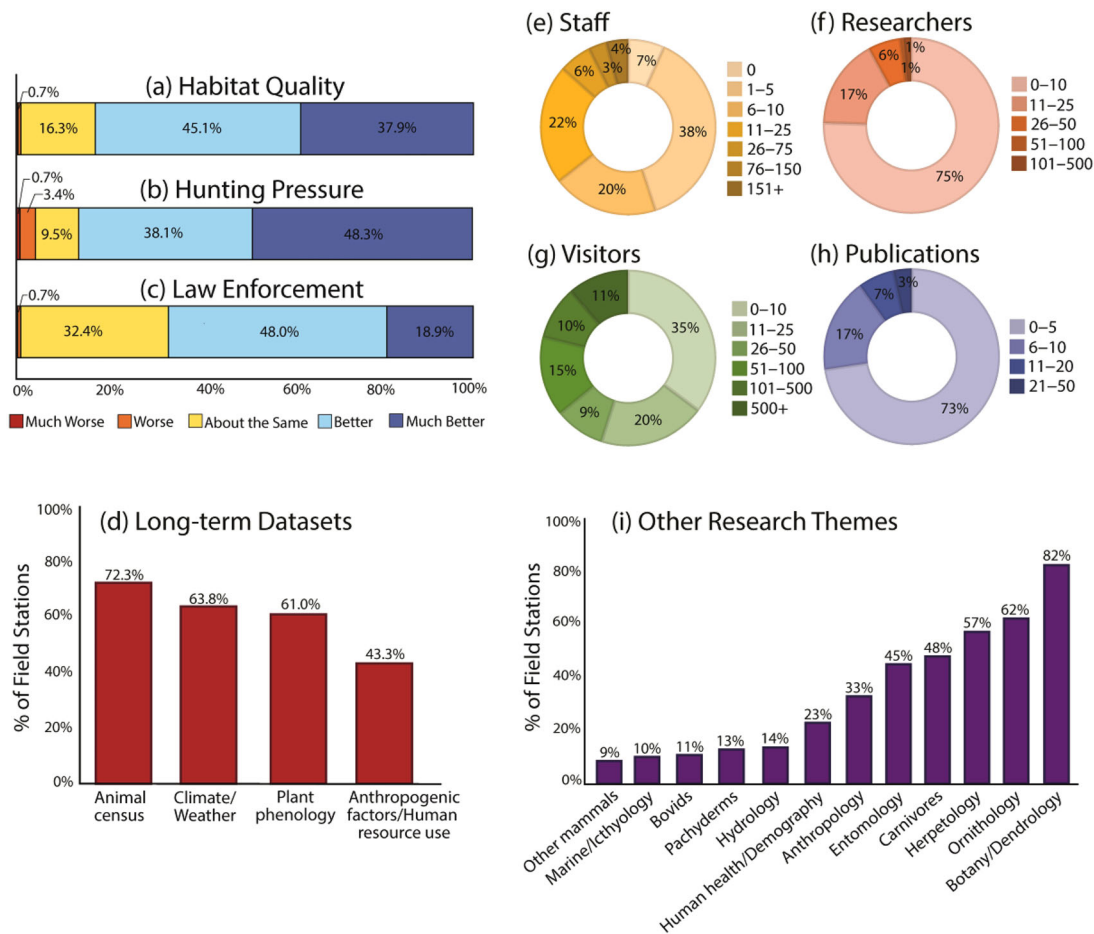
Based on our 5-km radius, the field stations in our study potentially overlapped with the IUCN Red List geographic ranges of 1215 terrestrial vertebrates that are listed as either threatened (1045) or data deficient (170), including 156 amphibians, 218 reptiles, 366 birds, and 475 mammals (169 of which are primates). The majority of these species were found in Africa (499), followed by Asia (377) and the Neotropics (342). An average of 13 threatened or data deficient species were covered by the field stations in Asia, 6.8 in the Neotropics, and 5.9 in Africa (Figure 2).

We successfully matched 153 field stations to control points that were similar climatically and with regard to the level of anthropogenic influence they face and their starting forest cover (Appendix S3). Though global deforestation rates have increased over time, when we assessed the effect of each field station location against their matched control points, we found that forest cover loss was significantly less near field stations ( $p < 0.05$ ), showing 17.6% less deforestation overall (Figure 3). This trend was mainly driven by field stations throughout Africa (22.0% less deforestation at field stations,  $p < 0.05$ ). Nevertheless, the average forest cover was also less near field stations in the Neotropics and Asia, with 13.2% ( $p = 0.16$ ) and 12.0% ( $p = 0.26$ ) less deforestation, respectively.

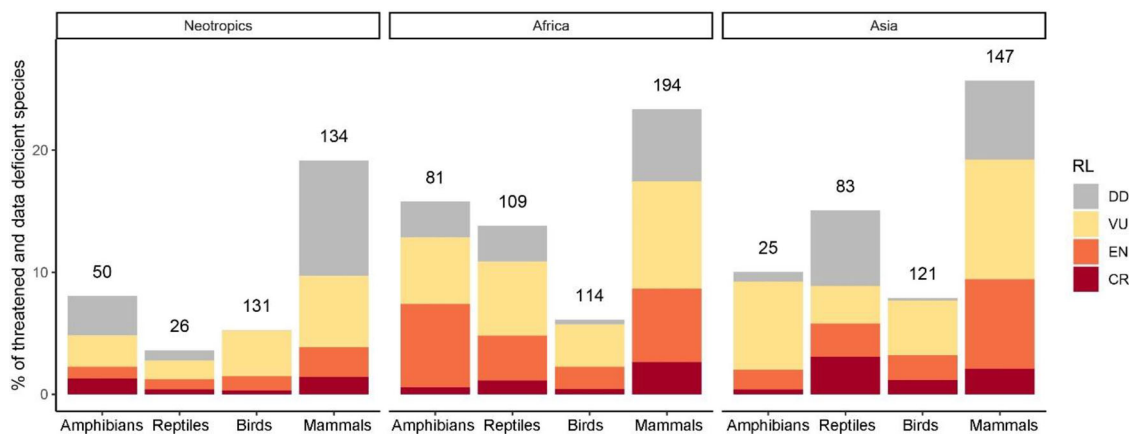
### Field stations' CROI and the impact of COVID-19

Typical operating budgets (in a non-COVID-19 year) were often small, with half of the field stations running on less than US\$50,000 (55% of  $n = 118$  stations; interquartile range: US\$200,000). Assuming a 5-km radius of direct field station impact on biodiversity (Wintle et al., 2019), the associated median annual cost is ~US\$637/km<sup>2</sup>. Forty percent of field stations had budgets between US\$50,000 and US\$500,000. These budgets were often sourced from three or fewer different funding sources, and one-quarter (23%) had only one type of funding source. Three-quarters of field stations (76% of  $n = 140$  stations) relied partially or exclusively on one-off grants for funding, half (49%) relied partially or exclusively on earned income, and just one-third (34%) had secured streams of income or endowments.

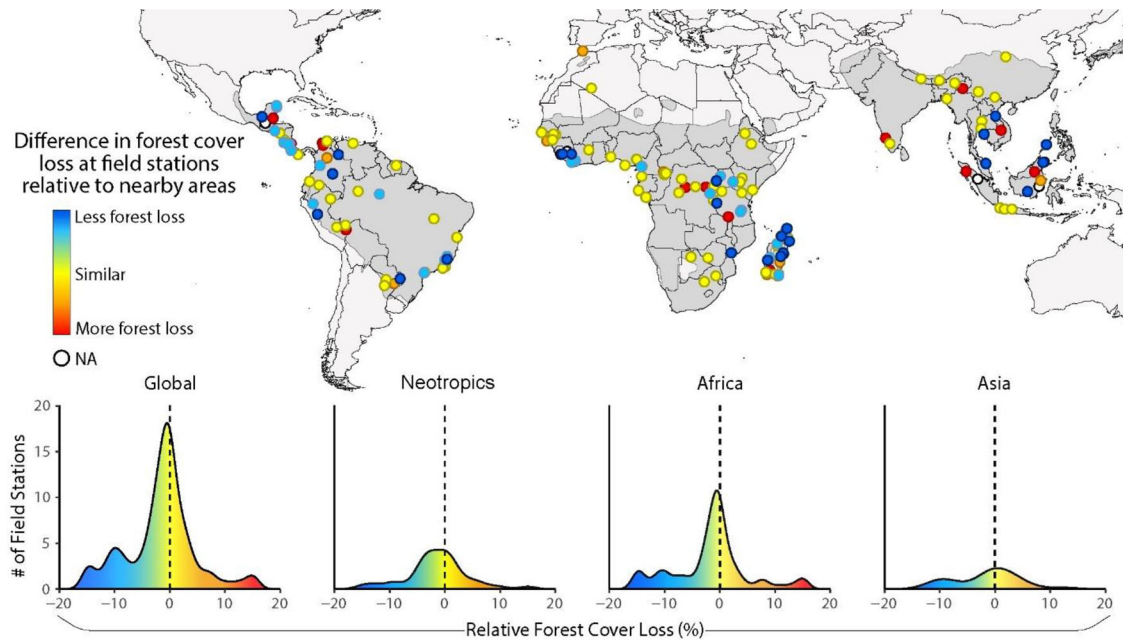
The COVID-19 pandemic caused half of the field stations (48% out of  $n = 128$  stations) to close partially or completely from March 2020 to June 2022. At the time of the survey, almost one quarter (22% of  $n = 156$  stations) remained partially or completely closed due to COVID-19.



**FIGURE 1** Selected results from our field stations survey. Compared to areas without field stations, survey respondents provided their perception of the impacts of field stations on (a) habitat quality, (b) hunting rates, and (c) law enforcement. Many field stations reported having (d) long-term datasets, some of which are publicly available. Each field station provided general information, so we present the total annual (e) staff employed, (f) researchers, (g) visitors, and (h) publication output of surveyed field stations. In addition to primate-related studies, (i) other research themes were common at many field stations.



**FIGURE 2** Percentage of threatened (i.e., Critically Endangered, Endangered, and Vulnerable) and data deficient species per taxonomic group categorized by geographic region, as listed on the IUCN Red List of Threatened Species (IUCN, 2022). The species list is obtained by intersecting all available species range maps for the different taxonomic groups with the 157 field stations across 56 countries. Percentages are calculated over the total number of species present (including Least Concern and Near Threatened species). The absolute number of threatened and data deficient species per taxonomic group is indicated above each bar.



**FIGURE 3** Map of field station locations surveyed ( $n = 157$ ) across the global distribution of primates (Jenkins et al., 2013), indicated by the darker gray. Field station color indicates the change in forest cover loss for each site compared to its matched control points since 2000 or the founding of the field station, whichever was most recent. Sites with white dots (NA) are ones for which suitable matched points could not be located ( $n = 4$ ). The density plots show that field stations reduce deforestation globally (64% of field stations exhibited less forest cover loss than the surrounding area). This trend is driven by less forest loss at field stations in Africa (69% of field stations) and the Neotropics (60%), but less so in Asia (58%), perhaps due to the smaller sample size.

Most respondents (72% of  $n = 143$  stations) had been able to visit the field station at some point after the global onset of the COVID-19 pandemic in March 2020, and most stations (76% of  $n = 143$  stations) had put adaptive measures in place to mitigate the impact of the pandemic on work at those sites. Since March 2020, half (50% of  $n = 131$  field stations) had less or much less funding, compared to 9% with more funding.

Looking forward, just under half of the field stations (46% of  $n = 137$  stations) anticipated being able to continue 76%–100% of the work they would have done before COVID-19. Furthermore, 15% of field stations said they expected to continue only 0%–25% of their work.

## DISCUSSION

Field stations are viewed to deter illegal natural resource extraction and defaunation (Figure 1) and reduce deforestation in regions that are not on track to meet their forest protection goals (i.e., Neotropics, Africa; Figure 3; FDAP, 2022). These benefits to biodiversity cost a median US\$637/km<sup>2</sup>, assuming a 5-km radius of effect (e.g., Campbell et al., 2011; Wintle et al., 2019). This gives field research stations a strong positive CROI, similar to the proposed budgets in the Africa Park Network for effective man-

agement (Lindsey et al., 2018). Indeed, most surveyed field stations reported operating budgets that are half—or even less—of the global mean budget for protected areas, US\$1,689/km<sup>2</sup>, adjusted for inflation (James et al., 1999). Like protected areas, these conservation sentinels would yield an even greater CROI with reliable and increased funding.

Field stations also benefit conservation efforts in a variety of other ways: they support the production of scientific articles, training and awareness, local economic expansion, and maintenance of irreplaceable, multidecadal climate and biodiversity datasets (e.g., Chapman et al., 2017; NRC, 2014; Sharma et al., 2022). The field stations we surveyed estimated they cumulatively produce ~1255 scientific articles annually. The amount of published research stemming from these locations provides a critical contribution to conservation initiatives: continually updating and improving essential information used for evidence-based decisions in a cross-discipline field (Christie et al., 2021; Kareiva & Marvier, 2012). Field stations also provide a hub for intergenerational and international collaboration and learning. Field station respondents reported hosting up to 3315 researchers each year, including students, scientists, conservation professionals, and community members, with a further ~18,950 visitors annually. Given the evidence that conservation messaging to ecotourists is

strongly influenced by interactions between visitors and researchers/professionals (Fernández-Llamazares et al., 2020; NRC, 2014), field stations represent a unique con- vocation of these disparate biodiversity enthusiasts. Fur- thermore, 93% of field stations incentivized conservation initiatives by hiring from local communities, improving both local livelihoods and the success of their conserva- tion programs (Wali et al., 2017). In fact, the involvement of local nationals in management positions, and in some cases ownership, is what allowed over half of the field stations surveyed to remain at least partially operational during the pandemic.

Unfortunately, it is evident from our study and others that field stations, like the biodiversity they protect, are at risk (Likens & Wagner, 2021). Half the surveyed field sta- tions had budgets reduced from their 2020 numbers and are now facing global inflation. With each global crisis, the resilience of field stations decreases (Schubel, 2015), and current events foreshadow years of difficulty for these institutions. Recent global crises have triggered higher energy prices, increased human population densities, and increased food insecurity across many high-biodiversity countries (Benton et al., 2022) and have led to increased natural resource extraction (Rawtani et al., 2022). Like- wise, the threat of global recession (IMF, 2022) is impacting field station budgets, which cannot accommodate rising inflation.

Most field stations typically function autonomously, per- haps explaining why few studies have explored the aggre- gate impact of their work (cf. NRC, 2014; Tydecks et al., 2016; Wyman et al., 2009). Despite this, our study suggests that field stations cumulatively make a substantial con- tribution to conservation. Conservation science relies on quantitative evidence collected at field stations to provide foundational knowledge for designing effective strategies (Kareiva & Marvier, 2012), and while those strategies tend to be focused regionally, their shared expertise can inspire solutions globally (NRC, 2014).

While field stations alone cannot ensure the persis- tence of species, we found that they are more successful at protecting local wildlife populations, among other clear and quantifiable conservation benefits at a relatively low cost. Meanwhile, countries throughout the Neotropics and Africa struggle to meet forest protection goals (FDAP, 2022), and global protected area personnel numbers and capacity are insufficient for effectively safeguarding biodi- versity (Appleton et al., 2022; Maxwell et al., 2020). Though our approach was mostly limited to tropical field stations hosting primate research, we would expect comparable positive impacts of field stations globally. Accordingly, failing to include field stations in international policy frameworks that address the global biodiversity crisis rep- resents a profound missed opportunity (Strier et al., 2021;

Wyman et al., 2009). We urge funders to reverse their declining support of long-term field station programs and increase investment beyond prepandemic levels. Similarly, we encourage governments and universities, both in the tropics and elsewhere, to recognize field stations as cru- cial, high-CROI tools for meeting conservation targets and to adopt policies that will promote the establish- ment and growth of field stations. These policies should incorporate strategies/contingencies to ensure long-term conservation and research activities, including through crisis periods, such as occurred during the COVID pan- demic.

## AFFILIATIONS

<sup>1</sup>Wildlife Madagascar, Antananarivo, Madagascar

<sup>2</sup>Department of Anthropology, Portland State University, Portland, Ore- gon, USA

<sup>3</sup>Conservation Science and Wildlife Health, San Diego Zoo Wildlife Alliance, Escondido, California, USA

<sup>4</sup>IUCN SSC Primate Specialist Group, Gland, Switzerland

<sup>5</sup>Lemur Love Inc., San Diego, California, USA

<sup>6</sup>College of Arts and Sciences, University of San Diego, San Diego, California, USA

<sup>7</sup>School of Global Integrative Studies, University of Nebraska–Lincoln, Lincoln, Nebraska, USA

<sup>8</sup>Center for Conservation and Research, Omaha's Henry Doorly Zoo and Aquarium, Omaha, Nebraska, USA

<sup>9</sup>Center for Tropical Research, University of California, Los Angeles, Los Angeles, California, USA

<sup>10</sup>Department of Biology and Biotechnology “Charles Darwin”, Sapienza University of Rome, Rome, Italy

<sup>11</sup>Department of Environmental Science, Radboud Institute for Biolog- ical and Environmental Sciences, Radboud University, Nijmegen, The Netherlands

<sup>12</sup>Neotropical Primate Conservation, Seaton, UK

<sup>13</sup>Asociación Neotropical Primate Conservation Perú, Moyobamba, Perú

<sup>14</sup>Department of Anthropology, University of Texas at Austin, Austin, Texas, USA

<sup>15</sup>Estación de Biodiversidad Tiputini, Colegio de Ciencias Biológicas y Ambientales, Universidad San Francisco de Quito-USFQ, Quito, Ecuador

<sup>16</sup>Department of Anthropology, Durham University, Durham, UK

<sup>17</sup>Department of Anthropology, University of Wisconsin–Madison, Madi- son, Wisconsin, USA

<sup>18</sup>Wildlife Conservation Society, Calabar, Nigeria

<sup>19</sup>Institute of Tropical Biodiversity and Sustainable Development, Univer- sity Malaysia Terengganu, Kuala Nerus, Malaysia

<sup>20</sup>Ebo Forest Research Project, Douala, Cameroon

<sup>21</sup>Wildlife Research and Conservation Unit, Nature Conservation Man- agement, Dhaka, Bangladesh

<sup>22</sup>HUTAN-KOCP, Kota Kinabalu, Malaysia

<sup>23</sup>Sabah Wildlife Department, Kota Kinabalu, Malaysia

<sup>24</sup>Madagasikara Voakajy, Antananarivo, Madagascar

<sup>25</sup>Mandai Nature, Singapore, Singapore



- <sup>26</sup>Instituto de Neuroetología, Universidad Veracruzana, Xalapa-Enríquez, México
- <sup>27</sup>School of Biological and Environmental Sciences, Liverpool John Moores University, Liverpool, UK
- <sup>28</sup>Department of Psychology, University of Lethbridge, Lethbridge, Alberta, Canada
- <sup>29</sup>Applied Behavioural Ecology and Ecosystem Research Unit, University of South Africa, Pretoria, South Africa
- <sup>30</sup>Department of Psychology, University of Michigan, Ann Arbor, Michigan, USA
- <sup>31</sup>Department of Anthropology, University of Michigan, Ann Arbor, Michigan, USA
- <sup>32</sup>Department of Anthropology, Emory University, Atlanta, Georgia, USA
- <sup>33</sup>Laboratório de Ecologia Comportamento e Conservação, Departamento de Zoologia, Universidade Federal de Pernambuco, Recife, Brazil
- <sup>34</sup>Pontifícia Universidade Católica do Rio Grande do Sul, PUCRS, Porto Alegre, Brazil
- <sup>35</sup>Strong Roots Congo, Bukavu, Democratic Republic of Congo
- <sup>36</sup>Institute of Tropical Forest Conservation, Mbarara University of Science and Technology, Mbarara, Uganda
- <sup>37</sup>Max Planck Institute for Evolutionary Anthropology, Leipzig, Germany
- <sup>38</sup>Department of Anthropology, University of Toronto Mississauga, Mississauga, Ontario, Canada
- <sup>39</sup>Maderas Rainforest Conservancy, Miami, Florida, USA
- <sup>40</sup>Mahidol University International College, Salaya, Thailand
- <sup>41</sup>Lolldaiga Hills Research Programme, Nanyuki, Kenya
- <sup>42</sup>Eastern Africa Primate Diversity and Conservation Program, Nanyuki, Kenya
- <sup>43</sup>Instituto de Ciências Naturais, Humanas e Sociais, Federal University of Mato Grosso, Sinop, Brazil
- <sup>44</sup>Instituto Ecológico, Sinop, Brazil
- <sup>45</sup>Primate Models for Behavioural Evolution Lab, Institute of Human Sciences, University of Oxford, Oxford, UK
- <sup>46</sup>Interdisciplinary Centre for Archaeology and Evolution of Human Behaviour (ICArEHB), Universidade do Algarve, Faro, Portugal
- <sup>47</sup>Biology Department, Vancouver Island University, Nanaimo, British Columbia, Canada
- <sup>48</sup>Primate Research & Conservation Division, Aaranyak, Guwahati, India
- <sup>49</sup>School of Social Sciences, Oxford Brookes University, Oxford, UK
- <sup>50</sup>Borneo Nature Foundation International, Tremough Innovation Centre, Penryn, UK
- <sup>51</sup>Department of Ecology, Evolution and Environmental Biology, Columbia University, New York, New York, USA
- <sup>52</sup>Yunkawasi, Lima, Perú
- <sup>53</sup>Department of Ecology and Evolutionary Biology, University of Michigan, Ann Arbor, Michigan, USA
- <sup>54</sup>Association Anoulak, Nakai-Nam Theun National Park Office, Nakai, Lao People's Democratic Republic
- <sup>55</sup>Department for the Ecology of Animal Societies, Max Planck Institute of Animal Behavior, Konstanz, Germany
- <sup>56</sup>Department of Biology, University of Konstanz, Konstanz, Germany
- <sup>57</sup>Smithsonian Tropical Research Institute, Balboa, Republic of Panama
- <sup>58</sup>North Carolina Zoo, Asheboro, North Carolina, USA
- <sup>59</sup>Cameroon Biodiversity Protection Program, CAMBIO (Cameroon Biodiversity Association), Mbam Djerem, Cameroon
- <sup>60</sup>Organisation pour le Développement Durable et la Biodiversité, Cotonou, Benin
- <sup>61</sup>Faculty of Renewable Natural Resources, Kwame Nkrumah University of Science and Technology, Kumasi, Ghana
- <sup>62</sup>Re:Wild, Arusha, Tanzania
- <sup>63</sup>Colegio de Ciencias Biológicas y Ambientales, Universidad San Francisco de Quito-USFQ, Quito, Ecuador
- <sup>64</sup>West African Primate Conservation Action, Accra, Ghana
- <sup>65</sup>Institute of Biological Sciences, College of Arts and Sciences, University of the Philippines Los Baños, Los Baños, Philippines
- <sup>66</sup>Association Mitsinjo, Andasibe, Madagascar
- <sup>67</sup>Estacion de Biología Los Tuxtlas Instituto de Biología, Universidad Nacional Autónoma de México (UNAM), Veracruz, México
- <sup>68</sup>Fundació UdG: Innovació i Formació, Universitat de Girona, Girona, Spain
- <sup>69</sup>Gorongosa National Park, Sofala, Mozambique
- <sup>70</sup>Division of Anthropology, California State University, Fullerton, Fullerton, California, USA
- <sup>71</sup>CEES, Department of Biosciences, University of Oslo, Oslo, Norway
- <sup>72</sup>Department of Anthropology, Yale University, New Haven, Connecticut, USA
- <sup>73</sup>BIOPOLIS Program in Genomics, Biodiversity and Land Planning, CIBIO, Vairão, Portugal
- <sup>74</sup>CIBIO, Centro de Investigação em Biodiversidade e Recursos Genéticos, InBIO Laboratório Associado, Campus de Vairão, Universidade do Porto, Vairão, Portugal
- <sup>75</sup>ONE - Organisms and Environment Group, School of Biosciences, Cardiff University, Cardiff, UK
- <sup>76</sup>Cognitive Ethology Laboratory, German Primate Center, Leibniz Institute for Primate Research, Göttingen, Germany
- <sup>77</sup>Department of Primate Cognition, Georg-August-Universität Göttingen, Göttingen, Germany
- <sup>78</sup>San Diego Zoo Global Peru, Cusco, Perú
- <sup>79</sup>Max Planck Institute of Animal Behavior, Konstanz, Germany
- <sup>80</sup>WWF Central African Republic Programme, Bangui, Central African Republic
- <sup>81</sup>Department of Biological Sciences and Environmental Studies, College of Science and Mathematics, University of the Philippines Mindanao, Davao City, Philippines
- <sup>82</sup>Institute of Zoology, Animal Ecology and Conservation, Universität Hamburg, Hamburg, Germany
- <sup>83</sup>Department of Anthropology, and Program in Ecology, Evolution, and Conservation Biology, University of Illinois Urbana-Champaign, Urbana, Illinois, USA
- <sup>84</sup>International Centre of Biodiversity and Primate Conservation, Dali University, Dali, China
- <sup>85</sup>The Habitats Trust, Shiv Nadar Foundation, Noida, India
- <sup>86</sup>Wildlife Information Liaison Development (WILD), Coimbatore, India
- <sup>87</sup>Department of Biology, Drexel University, Philadelphia, Pennsylvania, USA
- <sup>88</sup>UFR Biosciences, Université Félix Houphouët Boigny, Abidjan, Côte d'Ivoire

- <sup>89</sup>Suisse de Recherches Scientifique, Abidjan, Côte d'Ivoire
- <sup>90</sup>Sabah Wildlife Department, Danau Girang Field Centre, Kota Kinabalu, Malaysia
- <sup>91</sup>Organisms and Environment Division, Cardiff School of Biosciences, Cardiff University, Cardiff, UK
- <sup>92</sup>Laboratório de Biologia da Conservação, Departamento de Biologia, Instituto de Ciências Biológicas, Universidade Federal do Amazonas, Manaus, Brazil
- <sup>93</sup>CREATE-NEO Project, University of Texas Medical Branch, Galveston, Texas, USA
- <sup>94</sup>Colegio de Ciencias Biológicas y Ambientales COCIBA, Instituto Biósfera, Laboratorio de Biología Evolutiva, Universidad San Francisco de Quito, Quito, Ecuador
- <sup>95</sup>Department of Biology, University of North Carolina at Chapel Hill, Chapel Hill, North Carolina, USA
- <sup>96</sup>Conservation Bridges, Bogotá, Colombia
- <sup>97</sup>Save the Chimps, Inc., Fort Pierce, Florida, USA
- <sup>98</sup>Tonkolili Chimpanzee Project, Loxahatchee, Florida, USA
- <sup>99</sup>Biology Department, University of North Georgia, Dahlonega, Georgia, USA
- <sup>100</sup>Kibale Chimpanzee Project, Kibale National Park, Fort Portal, Uganda
- <sup>101</sup>Metropolitan Community College, Kansas City, Missouri, USA
- <sup>102</sup>Behavioral Ecology & Sociobiology Unit, German Primate Center, Leibniz Institute for Primate Research, Göttingen, Germany
- <sup>103</sup>Department of Zoology, University of Venda, Thohoyandou, South Africa
- <sup>104</sup>Centre for Ecology and Conservation, University of Exeter, Penryn, UK
- <sup>105</sup>Conservation International-Cambodia, Phnom Penh, Cambodia
- <sup>106</sup>Ecole de Foresterie et Gestion de la Faune, Université Nationale d'Agriculture, Porto Novo, Benin
- <sup>107</sup>Wildlife Research Center, Kyoto University, Inuyama, Japan
- <sup>108</sup>SW/Niger Delta Forest Project, Abuja, Nigeria
- <sup>109</sup>Wildlife Conservation Society, Bronx, New York, USA
- <sup>110</sup>Department of Anthropology, Northern Illinois University, DeKalb, Illinois, USA
- <sup>111</sup>ONG SADABE, Antananarivo, Madagascar
- <sup>112</sup>Department of Experimental Psychology, University of São Paulo, São Paulo, Brazil
- <sup>113</sup>Centro Nacional de Pesquisa e Conservação de Primatas Brasileiros, Instituto Chico Mendes de Conservação da Biodiversidade (ICM-Bio/CPB), Floresta Nacional da Restinga de Cabedelo, Cabedelo, Brazil
- <sup>114</sup>Conservation Through Public Health (CTPH), Entebbe, Uganda
- <sup>115</sup>Center of Excellence in Biodiversity and Natural Resource Management, University of Rwanda, Huye, Rwanda
- <sup>116</sup>School for the Environment, University of Massachusetts Boston, Boston, Massachusetts, USA
- <sup>117</sup>Department Sociobiology and Anthropology, University of Göttingen, Göttingen, Germany
- <sup>118</sup>Institute of Primate Research, National Museums of Kenya, Nairobi, Kenya
- <sup>119</sup>Department of Anthropology, Boston University, Boston, Massachusetts, USA
- <sup>120</sup>Gunung Palung Orangutan Conservation Program, West Kalimantan, Indonesia
- <sup>121</sup>Department of Biology, Faculty of Science, Mahidol University, Bangkok, Thailand
- <sup>122</sup>Ape Behaviour & Ecology Group, Department of Evolutionary Anthropology, University of Zurich, Zurich, Switzerland
- <sup>123</sup>Estación Biológica Corrientes - Centro de Ecología Aplicada del Litoral (CECOAL-CONICET-UNNE), Corrientes, Argentina
- <sup>124</sup>Institut Supérieur du Tourisme, Goma, Democratic Republic of Congo
- <sup>125</sup>Centre for Wildlife Studies, Bangalore, India
- <sup>126</sup>Trans-Disciplinary University, Bangalore, India
- <sup>127</sup>Fauna & Flora International - Vietnam Programme, Hanoi, Vietnam
- <sup>128</sup>Ankoatsifaka Research Station, Kirindy Mitea National Park, Menabe, Madagascar
- <sup>129</sup>Fauna & Flora International, Myanmar Programme, Yangon, Myanmar
- <sup>130</sup>Department of Biological Sciences, Universidad de Los Andes, Bogotá, Colombia
- <sup>131</sup>Fundación Proyecto Primates, Bogotá, Colombia
- <sup>132</sup>Fundación Pro-Conservación de los Primates Panameños, Panamá City, Republic of Panama
- <sup>133</sup>Departamento de Suelos y Aguas, Facultad de Ciencias Agropecuarias, Universidad de Panamá, Sede Chiriquí, Republic of Panama
- <sup>134</sup>Forestry Development Authority, Whein Town, Paynesville, Liberia
- <sup>135</sup>Madagascar Biodiversity Partnership, NGO, Antananarivo, Madagascar
- <sup>136</sup>Global Conservation Program, Wildlife Conservation Society, Bronx, New York, USA
- <sup>137</sup>Faculty of Natural Sciences, University of Stirling, Stirling, UK
- <sup>138</sup>National Primate Research Center of Thailand, Chulalongkorn University, Saraburi, Thailand
- <sup>139</sup>Department of Biology, Faculty of Science, Chulalongkorn University, Bangkok, Thailand
- <sup>140</sup>Solusi University, Bulawayo, Zimbabwe
- <sup>141</sup>Wilder Institute/Calgary Zoo, Calgary, Alberta, Canada
- <sup>142</sup>Department of Anthropology, The Ohio State University, Columbus, Ohio, USA
- <sup>143</sup>Department of Anthropology and Archaeology, University of Calgary, Calgary, Alberta, Canada
- <sup>144</sup>Department of Wildlife and Ecotourism Management, Bahir Dar University, Bahir Dar, Ethiopia
- <sup>145</sup>Grupo de Investigación de Primatología de la Universidad de Panamá (GIP-UP), Bella Vista, Republic of Panama
- <sup>146</sup>Centre for Research in Anthropology (CRIA – NOVA FCSH), Lisbon, Portugal
- <sup>147</sup>Department of Anthropology, School of Social Sciences and Humanities, NOVA University of Lisbon, Lisbon, Portugal
- <sup>148</sup>Bioko Biodiversity Protection Program, Department of Biology, Drexel University, Philadelphia, Pennsylvania, USA
- <sup>149</sup>Fundación Reserva Tesoro Escondido, Quito, Ecuador
- <sup>150</sup>Lester E. Fisher Center for the Study and Conservation of Apes, Lincoln Park Zoo, Chicago, Illinois, USA
- <sup>151</sup>Bioko Biodiversity Protection Program, Malabo, Equatorial Guinea

- <sup>152</sup>Département de Biologie Animale, Faculté des Sciences et Techniques, Université Cheikh Anta Diop de Dakar, Dakar, Senegal
- <sup>153</sup>Nocturnal Primate Research Group, School of Social Sciences, Oxford Brookes University, Oxford, UK
- <sup>154</sup>Little Fireface Project, Cipaganti, Indonesia
- <sup>155</sup>Oxford Wildlife Trade Research Group, Oxford Brookes University, Oxford, UK
- <sup>156</sup>Institut Congolais pour la Conservation de la Nature, Kinshasa, Democratic Republic of Congo
- <sup>157</sup>Department of Anthropology, Kent State University, Kent, Ohio, USA
- <sup>158</sup>Grupo de Investigación en Genética Aplicada (GIGA), Instituto de Biología Subtropical (IBS), Universidad Nacional de Misiones y Consejo Nacional de Investigaciones Científicas y Técnicas (UNAM-CONICET), Posadas, Argentina
- <sup>159</sup>Neotropical Primate Conservation Argentina, Puerto Iguazu, Argentina
- <sup>160</sup>Yayasan Konservasi Ekosistem Alam Nusantara (KIARA), Komplek Laladon Indah, Bogor, Indonesia
- <sup>161</sup>Javan Gibbons Research and Conservation Project, Bogor, Indonesia
- <sup>162</sup>Department of Behavioral Ecology, University of Göttingen, Göttingen, Germany
- <sup>163</sup>Primate Social Evolution Group, German Primate Center, Leibniz Institute for Primate Research, Göttingen, Germany
- <sup>164</sup>Kibale Chimpanzee Project, Makerere University Biological Field Station, Fort Portal, Uganda
- <sup>165</sup>Kibale Forest Schools Program, Fort Portal, Uganda
- <sup>166</sup>Department of Anthropology, University of California, Los Angeles, Los Angeles, California, USA
- <sup>167</sup>Department of Anthropology, Texas State University, San Marcos, Texas, USA
- <sup>168</sup>Department of Evolutionary Anthropology, Duke University, Durham, North Carolina, USA
- <sup>169</sup>Research Group on Primate Biology and Conservation, Mamirauá Institute for Sustainable Development, Tefé, Brazil
- <sup>170</sup>Universidad de los Andes, Bogota, Colombia
- <sup>171</sup>Association Européenne pour l'Etude et la Conservation des Lémuriens, Antananarivo, Madagascar
- <sup>172</sup>Groupe d'Etude et de Recherche sur les Primates (GERP), Antananarivo, Madagascar
- <sup>173</sup>Département Agroécologie, Biodiversité et Changement Climatique, ESSA, Université d'Antananarivo, Antananarivo, Madagascar
- <sup>174</sup>IMPACT Madagascar, Antananarivo, Madagascar
- <sup>175</sup>Mention Anthropobiologie et Développement Durable, Faculté des Sciences, Université d'Antananarivo, Antananarivo, Madagascar
- <sup>176</sup>Department of Integrative Biology, University of California, Berkeley, Berkeley, California, USA
- <sup>177</sup>School of Anthropology, University of Oxford, Oxford, UK
- <sup>178</sup>Budongo Conservation Field Station, Masindi, Uganda
- <sup>179</sup>Department of Biology, Faculty of Sciences, Andalas University, Padang, Indonesia
- <sup>180</sup>Programa de Conservación Ateles de la Asociación Territorios Vivos El Salvador, San Salvador, El Salvador
- <sup>181</sup>Organización para la Conservación de la Naturaleza y Desarrollo Comunitario, Cobán, Guatemala
- <sup>182</sup>Department of Anthropology, Washington University in St. Louis, St. Louis, Missouri, USA
- <sup>183</sup>Wildlife Conservation Society, Congo Program, Brazzaville, Democratic Republic of Congo
- <sup>184</sup>Department of Geography and Environmental Studies, Carleton University, Ottawa, Ontario, Canada
- <sup>185</sup>Proyecto Titi, Inc., Orlando, Florida, USA
- <sup>186</sup>Biology Department, Regis University, Denver, Colorado, USA
- <sup>187</sup>Laboratory of Ecology and Ecotoxicology, Department of Zoology and Animal Biology, University of Lomé, Lomé, Togo
- <sup>188</sup>Togolese Society for Nature Conservation (AGBO-ZEGUE NGO), Lomé, Togo
- <sup>189</sup>Instituto de Ecología A.C., Xalapa, México
- <sup>190</sup>SwaroOwa, Coffee and Primate Conservation Project, Java, Indonesia
- <sup>191</sup>Zoological Society of Trinidad and Tobago, Port of Spain, Trinidad
- <sup>192</sup>Zoological Association of America, Punta Gorda, Florida, USA
- <sup>193</sup>Unit of Evolutionary Biology and Ecology (EBE), Département de Biologie des Organismes, Université Libre de Bruxelles, Brussels, Belgium
- <sup>194</sup>Department of Biology, Purdue University Fort Wayne, Fort Wayne, Indiana, USA
- <sup>195</sup>Bioko Marine Turtle Program, Malabo, Equatorial Guinea
- <sup>196</sup>Fundación Para La Tierra, Pilar, Paraguay
- <sup>197</sup>ConMonoMaya A.C., Chemax, Mexico
- <sup>198</sup>Department of Anthropology, University College London, London, UK
- <sup>199</sup>Uaso Ngiro Baboon Project, Nairobi, Kenya
- <sup>200</sup>Department of Anthropology, University of California, San Diego, La Jolla, California, USA
- <sup>201</sup>Department of Human Evolutionary Biology, Harvard University, Cambridge, Massachusetts, USA
- <sup>202</sup>Departamento de Ciências Ambientais, Lab Ecologia e Conservação da Natureza and the Programa Análise Ambiental Integrada, Universidade Federal de São Paulo, São Paulo, Brazil
- <sup>203</sup>Pró-Muriqui Institute, São Paulo, Brazil
- <sup>204</sup>Centre for Research and Conservation, Royal Zoological Society of Antwerp, Antwerp, Belgium
- <sup>205</sup>Projet Grands Singes, Yaoundé, Cameroon
- <sup>206</sup>Center for Anthropology, Venezuelan Institute for Scientific Research, Caracas, Venezuela
- <sup>207</sup>Instituto de Desenvolvimento Sustentável Mamirauá, Tefé, Brazil
- <sup>208</sup>Rede de Pesquisa para Estudos sobre Diversidade, Conservação e Uso da Fauna na Amazônia (RedeFauna), Manaus, Brazil
- <sup>209</sup>Department of Anthropology, Rutgers, The State University of New Jersey, New Brunswick, New Jersey, USA
- <sup>210</sup>Center for Human Evolutionary Studies, Rutgers University, New Brunswick, New Jersey, USA
- <sup>211</sup>Wildlife Conservation Society, Bolivia Program, La Paz, Bolivia
- <sup>212</sup>Kasokwa-Kityedo Forest Project, Masindi, Uganda
- <sup>213</sup>Barbary Macaque Awareness and Conservation, Tetouan, Morocco
- <sup>214</sup>Institute for Cognitive Sciences, CNRS, University of Lyon, Lyon, France
- <sup>215</sup>Tai Chimpanzee Project, Suisse de Recherches Scientifique, Abidjan, Côte d'Ivoire

<sup>216</sup>Peabody Museum, Harvard University, Cambridge, Massachusetts, USA

<sup>217</sup>Institute for the Conservation of Tropical Environments, Stony Brook University, Stony Brook, New York, USA

<sup>218</sup>Centre ValBio, Ranomafana, Madagascar

<sup>219</sup>Re:Wild, Austin, Texas, USA

## ACKNOWLEDGMENTS

The origin of this paper was inspired by a keynote lecture from Lifetime Achievement Award recipient, Professor Vernon Reynolds, at the 2022 meeting of the International Primatological Society in Quito, Ecuador. This study is dedicated to the late Christophe Boesch, who suddenly passed on January 14, 2024. He founded the ongoing Tai Chimpanzee Project in 1979 and his vision for long-term field research has galvanized and supported many field sites around the globe. His passion for science and conservation has inspired all of us. He will be truly missed.

## CONFLICT OF INTEREST STATEMENT

All authors are affiliated with one or more field stations; thus, the perception of multiple conflicts of interest exists.

## DATA AVAILABILITY STATEMENT

Due to our IRB ethics approval, we are unable to provide any individual/field station identifying information; however, anonymized data and statistical codes used to support this study can be found in the following repository: <https://anonymous.4open.science/r/FieldStationConservation-8F05/>.

## FUNDING INFORMATION

None.

## ORCID

Timothy M. Eppley  <https://orcid.org/0000-0003-1456-6948>


Timothy M. Sefczek  <https://orcid.org/0000-0003-3612-3216>

Jen Tinsman  <https://orcid.org/0000-0003-2452-4573>

Luca Santini  <https://orcid.org/0000-0002-5418-3688>

Selwyn Hoeks  <https://orcid.org/0000-0001-5619-3233>

Sam Shane  <https://orcid.org/0000-0001-5573-6208>

Anthony Di Fiore  <https://orcid.org/0000-0001-8893-9052>


Joanna M. Setchell  <https://orcid.org/0000-0002-5782-1235>

Karen B. Strier  <https://orcid.org/0000-0003-2520-9110>

Aini Hasanah Abd Mutalib  <https://orcid.org/0000-0002-3862-237X>

Tanvir Ahmed  <https://orcid.org/0000-0002-0590-9104>

Marc Ancrenaz  <https://orcid.org/0000-0003-2325-2879>


Raphali R. Andriantsimanarilafy  <https://orcid.org/0000-0002-9897-9434>

Andie Ang  <https://orcid.org/0000-0001-5667-3106>

Filippo Aureli  <https://orcid.org/0000-0002-0671-013X>


Louise Barrett  <https://orcid.org/0000-0003-1841-2997>

Jacinta C. Beehner  <https://orcid.org/0000-0001-6566-6872>


Marcela E. Benítez  <https://orcid.org/0000-0001-7425-9507>

Bruna M. Bezerra  <https://orcid.org/0000-0003-3039-121X>

Júlio César Bicca-Marques  <https://orcid.org/0000-0002-5400-845X>

Dominique Bikaba  <https://orcid.org/0000-0002-4066-9484>


Robert Bitariho  <https://orcid.org/0000-0002-3461-0013>


Christophe Boesch  <https://orcid.org/0000-0001-9538-7858>

Laura M. Bolt  <https://orcid.org/0000-0002-8275-6543>


Ramesh Boonratana  <https://orcid.org/0000-0002-8589-4984>

Gustavo R. Canale  <https://orcid.org/0000-0002-3932-282X>


Susana Carvalho  <https://orcid.org/0000-0003-4542-3720>

Colin A. Chapman  <https://orcid.org/0000-0002-8827-8140>

Dilip Chetry  <https://orcid.org/0000-0002-0590-7352>


Susan M. Cheyne  <https://orcid.org/0000-0002-9180-3356>

Marina Cords  <https://orcid.org/0000-0001-7416-0603>


Fanny M. Cornejo  <https://orcid.org/0000-0002-1989-6762>


Liliana Cortés-Ortiz  <https://orcid.org/0000-0002-1197-6362>

Camille N. Z. Coudrat  <https://orcid.org/0000-0002-6093-2462>

Margaret C. Crofoot  <https://orcid.org/0000-0002-0056-7950>


Drew T. Cronin  <https://orcid.org/0000-0002-1618-1091>

Emmanuel Danquah  <https://orcid.org/0000-0002-8305-5706>


Tim R. B. Davenport  <https://orcid.org/0000-0001-9640-1922>

Yvonne A. de Jong  <https://orcid.org/0000-0002-8677-3738>

Stella de la Torre  <https://orcid.org/0000-0002-1627-2751>

Andrea Dempsey  <https://orcid.org/0000-0001-8627-8086>

Giuseppe Donati  <https://orcid.org/0000-0002-4803-0642>

Alejandro Estrada  <https://orcid.org/0000-0002-6107-9109>

- Peter J. Fashing  <https://orcid.org/0000-0003-3854-1999>
- Eduardo Fernandez-Duque  <https://orcid.org/0000-0002-3993-7912>
- Maria J. Ferreira da Silva  <https://orcid.org/0000-0001-6747-9827>
- Julia Fischer  <https://orcid.org/0000-0002-5807-0074>
- César F. Flores-Negrón  <https://orcid.org/0000-0001-7167-7367>
- Barbara Fruth  <https://orcid.org/0000-0001-9217-3053>
- Terence Fuh Neba  <https://orcid.org/0000-0003-3613-4791>
- Lief Erikson Gamalo  <https://orcid.org/0000-0002-1353-0591>
- Jörg U. Ganzhorn  <https://orcid.org/0000-0003-1395-9758>
- Paul A. Garber  <https://orcid.org/0000-0003-0053-8356>
- Smitha D. Gnanaolivu  <https://orcid.org/0000-0003-4494-804X>
- Mary Katherine Gonder  <https://orcid.org/0000-0003-4190-4682>
- Sery Ernest Gonedelé Bi  <https://orcid.org/0000-0002-2760-2795>
- Benoit Goossens  <https://orcid.org/0000-0003-2360-4643>
- Marcelo Gordo  <https://orcid.org/0000-0001-5230-9091>
- Juan M. Guayasamin  <https://orcid.org/0000-0003-0098-978X>
- Diana C. Guzmán-Caro  <https://orcid.org/0000-0003-1974-562X>
- Eckhard W. Heymann  <https://orcid.org/0000-0002-4259-8018>
- Russell A. Hill  <https://orcid.org/0000-0002-7601-5802>
- Kimberley J. Hockings  <https://orcid.org/0000-0002-6187-644X>
- Mariano G. Hounghédji  <https://orcid.org/0000-0002-2486-3244>
- Michael A. Huffman  <https://orcid.org/0000-0003-2115-7923>
- Mitchell T. Irwin  <https://orcid.org/0000-0003-2088-0028>
- Patricia Izar  <https://orcid.org/0000-0001-6741-0731>
- Leandro Jerusalinsky  <https://orcid.org/0000-0003-0744-1987>
- Gladys Kalema-Zikusoka  <https://orcid.org/0000-0003-3473-3205>
- Beth A. Kaplin  <https://orcid.org/0000-0001-5396-5445>
- Peter M. Kappeler  <https://orcid.org/0000-0002-4801-487X>
- Cheryl D. Knott  <https://orcid.org/0000-0002-1940-7199>
- Kathelijne Koops  <https://orcid.org/0000-0001-7097-2698>
- Martin M. Kowalewski  <https://orcid.org/0000-0002-6737-3771>
- Deo Kujirakwinja  <https://orcid.org/0000-0003-2649-3854>
- Quyet K. Le  <https://orcid.org/0000-0002-0097-5508>
- Rebecca J. Lewis  <https://orcid.org/0000-0003-3533-6105>
- Andrés Link  <https://orcid.org/0000-0003-3125-249X>
- Luz I. Loria  <https://orcid.org/0000-0002-9977-0894>
- Menladi M. Lormie  <https://orcid.org/0000-0002-7118-018X>
- Edward E. Louis Jr.  <https://orcid.org/0000-0002-3634-4943>
- Ngwe Lwin  <https://orcid.org/0000-0002-4394-3741>
- Fiona Maisels  <https://orcid.org/0000-0002-0778-0615>
- Suchinda Malaivijitnond  <https://orcid.org/0000-0003-0897-2632>
- Gráinne M. McCabe  <https://orcid.org/0000-0002-6235-0212>
- W. Scott McGraw  <https://orcid.org/0000-0003-1986-7408>
- Addisu Mekonnen  <https://orcid.org/0000-0001-8403-1071>
- Pedro G. Méndez-Carvajal  <https://orcid.org/0000-0003-1306-5869>
- Tânia Minhões  <https://orcid.org/0000-0003-0183-1343>
- Citlalli Morelos-Juárez  <https://orcid.org/0000-0002-6224-038X>
- Bethan J. Morgan  <https://orcid.org/0000-0003-2835-9835>
- David Morgan  <https://orcid.org/0000-0003-1266-2610>
- Papa Ibnou Ndiaye  <https://orcid.org/0000-0002-9978-564X>
- K. Anne-Isola Nekaris  <https://orcid.org/0000-0001-5523-7353>
- Vincent Nijman  <https://orcid.org/0000-0002-5600-4276>
- Marilyn A. Norconk  <https://orcid.org/0000-0002-7995-8646>
- Luciana I. Oklander  <https://orcid.org/0000-0003-1751-6313>
- Rahayu Oktaviani  <https://orcid.org/0000-0002-8272-5245>
- Julia Ostner  <https://orcid.org/0000-0001-6871-9976>
- Emily Otali  <https://orcid.org/0000-0001-6837-1260>
- Susan E. Perry  <https://orcid.org/0000-0001-5306-5383>
- Leila M. Porter  <https://orcid.org/0000-0003-4520-8617>
- Jill D. Pruetz  <https://orcid.org/0000-0002-9151-8571>
- Anne E. Pusey  <https://orcid.org/0000-0002-2280-8954>
- Helder L. Queiroz  <https://orcid.org/0000-0002-4425-3208>
- Mónica A. Ramírez  <https://orcid.org/0000-0003-2432-0298>
- Hoby Rasoanaivo  <https://orcid.org/0000-0002-5079-6356>
- Onja H. Razafindratsima  <https://orcid.org/0000-0003-1655-6647>
- Vernon Reynolds  <https://orcid.org/0000-0001-7412-5445>
- Rizaldi Rizaldi  <https://orcid.org/0000-0002-3524-9004>

Martha M. Robbins  <https://orcid.org/0000-0002-6037-7542>

Melissa E. Rodriguez  <https://orcid.org/0000-0002-7965-1812>

Dipto Sarkar  <https://orcid.org/0000-0003-2254-049X>

Anne Savage  <https://orcid.org/0000-0002-4738-8490>

Amy L. Schreier  <https://orcid.org/0000-0002-0379-3750>

Oliver Schülke  <https://orcid.org/0000-0003-0028-9425>

Gabriel H. Segniagbeto  <https://orcid.org/0000-0002-4697-3671>

Juan Carlos Serio-Silva  <https://orcid.org/0000-0002-0582-2041>

Arif Setiawan  <https://orcid.org/0000-0002-6090-906X>

Felipe E. Silva  <https://orcid.org/0000-0002-1315-0847>

Rebecca L. Smith  <https://orcid.org/0000-0002-0278-9071>

Denise Spaan  <https://orcid.org/0000-0002-6876-1194>

Fiona A. Stewart  <https://orcid.org/0000-0002-4929-4711>

Shirley C. Strum  <https://orcid.org/0000-0001-8819-8493>

Martin Surbeck  <https://orcid.org/0000-0003-2910-2927>

Magdalena S. Svensson  <https://orcid.org/0000-0002-6149-0192>

Mauricio Talebi  <https://orcid.org/0000-0001-6783-2715>

Luc Roscelin Tédonzong  <https://orcid.org/0000-0002-9347-8630>

Bernardo Urbani  <https://orcid.org/0000-0001-5392-9751>

João Valsecchi  <https://orcid.org/0000-0002-9138-0381>

Natalie Vasey  <https://orcid.org/0000-0002-0384-954X>

Erin R. Vogel  <https://orcid.org/0000-0001-6304-5423>

Robert B. Wallace  <https://orcid.org/0000-0001-7411-6338>

Siân Waters  <https://orcid.org/0000-0001-9261-3629>

Roman M. Wittig  <https://orcid.org/0000-0001-6490-4031>

Richard W. Wrangham  <https://orcid.org/0000-0003-0435-2209>

Patricia C. Wright  <https://orcid.org/0000-0002-9443-383X>

Russell A. Mittermeier  <https://orcid.org/0000-0002-8002-826X>

## REFERENCES

- Andam, K. S., Ferraro, P. J., Pfaff, A., Sanchez-Azofeifa, G. A., & Robalino, J. A. (2008). Measuring the effectiveness of protected area networks in reducing deforestation. *Proceedings of the National Academy of Sciences of the United States of America*, *105*, 16089–16094.
- Appleton, M. R., Courtiol, A., Emerton, L., Slade, J. L., Tilker, A., Warr, L. C., Malvido, M. Á., Barborak, J. R., de Bruin, L., Chapple, R., Daltry, J. C., Hadley, N. P., Jordan, C. A., Rousset, F., Singh, R., Sterling, E. J., Wessling, E. G., & Long, B. (2022). Protected area personnel and ranger numbers are insufficient to deliver global expectations. *Nature Sustainability*, *5*, 1100–1110.
- Benton, T. G., Froggatt, A., Wellesley, L., Grafham, O., King, R., Morisetti, N., Nixey, J., & Schröder, P. (2022). *The Ukraine war and threats to food and energy security*. Chatham House—International Affairs Think Tank. [https://www.chathamhouse.org/sites/default/files/2022-04/2022-04-12-ukraine-war-threats-food-energy-security-benton-et-al\\_0.pdf](https://www.chathamhouse.org/sites/default/files/2022-04/2022-04-12-ukraine-war-threats-food-energy-security-benton-et-al_0.pdf)
- Boyd, J., Epanchin-Niell, R., & Siikamaki, J. (2015). Conservation planning: A review of return on investment analysis. *Review of Environmental Economics and Policy*, *9*(1), 23–42.
- Campbell, G., Kuehl, H., Diarrassouba, A., N'Goran, P. K., & Boesch, C. (2011). Long-term research sites as refugia for threatened and over-harvested species. *Biology Letters*, *7*(5), 723–726.
- Chapman, C. A., Corriveau, A., Schoof, V. A., Twinomugisha, D., & Valenta, K. (2017). Long-term simian research sites: Significance for theory and conservation. *Journal of Mammalogy*, *98*(3), 652–660.
- Cho, S.-H., Thiel, K., Armsworth, P. R., & Sharma, B. P. (2019). Effects of protected area size on conservation return on investment. *Environmental Management*, *63*, 777–788.
- Christie, A. P., White, T. B., Martin, P. A., Petrovan, S. O., Bladon, A. J., Bowkett, A. E., Littlewood, N. A., Mupepele, A. C., Rocha, R., Sainsbury, K. A., Smith, R. K., Taylor, N. G., & Sutherland, W. J. (2021). Reducing publication delay to improve the efficiency and impact of conservation science. *PeerJ*, *9*, Article e12245.
- Eppley, T. M., Reuter, K. E., Sefczek, T. M., Tinsman, J., Wright, P. C., & Mittermeier, R. A. (2022). Field research stations are key to global conservation targets. *Nature*, *612*, Article 33.
- Estrada, A., Garber, P. A., Rylands, A. B., Roos, C., Fernandez-Duque, E., Di Fiore, A., Nekaris, K. A., Nijman, V., Heymann, E. W., Lambert, J. E., Rovero, F., Barelli, C., Setchell, J. M., Gillespie, T. R., Mittermeier, R. A., Arregoitia, L. V., de Guinea, M., Gouveia, S., Dobrovolski, R., ... Li, B. (2017). Impending extinction crisis of the world's primates: Why primates matter. *Science Advances*, *3*, Article e1600946.
- Fernández-Llamazares, Á., Fraixedas, S., Brias-Guinart, A., & Terraube, J. (2020). Principles for including conservation messaging in wildlife-based tourism. *People and Nature*, *2*(3), 596–607.
- Field, C. R., & Elphick, C. S. (2019). Quantifying the return on investment of social and ecological data for conservation planning. *Environmental Research Letters*, *14*(12), Article 124081.
- Forest Declaration Assessment Partners (FDAP). (2022). *Forest Declaration Assessment: Are we on track for 2030? Executive summary*. [www.forestdeclaration.org](http://www.forestdeclaration.org)
- Gibbons, D. W., Sandbrook, C., Sutherland, W. J., Akter, R., Bradbury, R., Broad, S., Clements, A., Crick, H. Q. P., Elliott, J., Gyeltshen, N., Heath, M., Hughes, J., Jenkins, R. K. B., Jones, A. H., Lopez de la Lama, R., Macfarlane, N. B. W., Maunder, M., Prasad, R., Romero-Muñoz, A., ... Ockendon, N. (2022). The relative importance of COVID-19 pandemic impacts on biodiversity conservation globally. *Conservation Biology*, *36*, Article e13781.
- 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. (2013). High-resolution global maps of 21st-century forest cover change. *Science*, *342*, 850–853. <https://glad.earthengine.app/view/global-forest-change>
- International Monetary Fund (IMF). (2022). *World economic outlook: Countering the cost-of-living crisis*. Author.
- International Union for Conservation of Nature (IUCN). (2022). *The IUCN Red List of Threatened Species*. Version 2022-1. <https://www.iucnredlist.org>

- James, A. N., Green, M. J. B., & Paine, J. R. (1999). *A global review of protected area budgets and staffing*. WCMC—World Conservation Press.
- Jenkins, C. N., Pimm, S. L., & Joppa, L. N. (2013). Global patterns of terrestrial vertebrate diversity and conservation. *Proceedings of the National Academy of Sciences of the United States of America*, *110*(28), E2602–E2610.
- Joppa, L. N., & Pfaff, A. (2011). Global protected area impacts. *Proceedings of the Royal Society B: Biological Sciences*, *278*, 1633–1638.
- Kareiva, P., & Marvier, M. (2012). What is conservation science? *BioScience*, *62*(11), 962–969.
- Kujala, H., Lahoz-Monfort, J. J., Elith, J., & Moilanen, A. (2018). Not all data are equal: Influence of data type and amount in spatial conservation prioritization. *Methods in Ecology and Evolution*, *9*(11), 2249–2261.
- Lindsey, P. A., Miller, J. R., Petracca, L. S., Coad, L., Dickman, A. J., Fitzgerald, K. H., Flyman, M. V., Funston, P. J., Henschel, P., Kasiki, S., Knights, K., Loveridge, A. J., Macdonald, D. W., Mandisodza-Chikerema, R. L., Nazerali, S., Plumptre, A. J., Stevens, R., van Zyl, H. W., & Hunter, L. T. B. (2018). More than \$1 billion needed annually to secure Africa's protected areas with lions. *Proceedings of the National Academy of Sciences of the United States of America*, *115*(45), E10788–E10796.
- Likens, G. E., & Wagner, D. L. (2021). Save Earth's global observatories. *Science*, *373*, Article 135.
- Mallapaty, S. (2022). COVID delays are frustrating the world's plans to save biodiversity. *Nature*, *606*, 19–20.
- Maxwell, S. L., Cazalis, V., Dudley, N., Hoffmann, M., Rodrigues, A. S., Stolton, S., Visconti, P., Woodley, S., Kingston, N., Lewis, E., Maron, M., Strassburg, B. B. N., Wenger, A., Jonas, H. D., Venter, O., & Watson, J. E. M. (2020). Area-based conservation in the twenty-first century. *Nature*, *586*(7828), 217–227.
- McCleery, R. A., Fletcher, R. J. Jr., Kruger, L. M., Govender, D., & Ferreira, S. M. (2020). Conservation needs a COVID-19 bailout. *Science*, *369*, 515–516.
- Mittermeier, R. A., Rylands, A. B., & Wilson, D. E. (2013). *Handbook of the mammals of the world. Volume 3: Primates*. Lynx Edicions.
- National Research Council (NRC). (2014). *Enhancing the value and sustainability of field stations and marine laboratories in the 21st century*. National Academies Press.
- Rawtani, D., Gupta, G., Khatri, N., Rao, P. K., & Hussain, C. M. (2022). Environmental damages due to war in Ukraine: A perspective. *Science of the Total Environment*, *850*, Article 157932.
- Rondinini, C., Wilson, K. A., Boitani, L., Grantham, H., & Possingham, H. P. (2006). Tradeoffs of different types of species occurrence data for use in systematic conservation planning. *Ecology Letters*, *9*, 1136–1145.
- Schubel, J. R. (2015). Some thoughts on keeping field stations and marine labs afloat in turbulent times. *BioScience*, *65*(5), 458–459.
- Sharma, S., Filazzola, A., Nguyen, T., Imrit, M. A., Blagrove, K., Bouffard, D., Daly, J., Feldman, H., Feldsine, N., Hendricks-Franssen, H. J., Granin, N., Hecock, R., L'Abée-Lund, J. H., Hopkins, E., Howk, N., Iacono, M., Knoll, L. B., Korhonen, J., Malmquist, H. J., ... Magnuson, J. J. (2022). Long-term ice phenology records spanning up to 578 years for 78 lakes around the Northern Hemisphere. *Scientific Data*, *9*, Article 318.
- Strier, K. B., Melo, F. R., Mendes, S. L., Valença-Montenegro, M. M., Rylands, A. B., Mittermeier, R. A., & Jerusalinsky, L. (2021). Science, policy, and conservation management for a critically endangered primate in the Atlantic Forest of Brazil. *Frontiers in Conservation Science*, *2*, Article 734183.
- Stuart, E. A., King, G., Imai, K., & Ho, D. (2011). MatchIt: Nonparametric preprocessing for parametric causal inference. *Journal of Statistical Software*, *42*, 1–28.
- Sze, J. S., Carrasco, L. R., Childs, D., & Edwards, D. P. (2022). Reduced deforestation and degradation in Indigenous Lands pan-tropically. *Nature Sustainability*, *5*, 123–130.
- Tydecks, L., Bremerich, V., Jentschke, I., Likens, G. E., & Tockner, K. (2016). Biological field stations: A global infrastructure for research, education, and public engagement. *BioScience*, *66*, 164–171.
- Wali, A., Alvira, D., Tallman, P., Ravikumar, A., & Macedo, M. (2017). A new approach to conservation: Using community empowerment for sustainable well-being. *Ecology and Society*, *22*(4), Article 6.
- Wintle, B. A., Kujala, H., Whitehead, A., Cameron, A., Veloz, S., Kukkala, A., Moilanen, A., Gordon, A., Lentini, P. E., Cadenhead, N. C. R., & Bekessy, S. A. (2019). Global synthesis of conservation studies reveals the importance of small habitat patches for biodiversity. *Proceedings of the National Academy of Sciences of the United States of America*, *116*, 909–914.
- Wyman, R. L., Wallensky, E., & Baine, M. (2009). The activities and importance of international field stations. *BioScience*, *59*, 584–592.

## SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

**How to cite this article:** Eppley, T. M., Reuter, K. E., Sefczek, T. M., Tinsman, J., Santini, L., Hoeks, S., Andriantsaralaza, S., Shane, S., Fiore, A. D., Setchell, J. M., Strier, K. B., Abanyam, P. A., Mutalib, A. H. A., Abwe, E., Ahmed, T., Ancrenaz, M., Andriantsimanarilafy, R. R., Ang, A., Aureli, F., ... Mittermeier, R. A. (2024). Tropical field stations yield high conservation return on investment. *Conservation Letters*, e13007.

<https://doi.org/10.1111/conl.13007>