

**DATA PAPER**






# WABAD: A world annotated bird acoustic dataset for passive acoustic monitoring

Cristian Pérez-Granados<sup>1,2</sup>  | Jon Morant<sup>2</sup>  | Kevin F. A. Darras<sup>3</sup> |  
 Oscar H. Marín-Gómez<sup>4</sup>  | Irene Mendoza<sup>5,6</sup> |  
 Miguel A. Muñoz-Mohedano<sup>6,7</sup>  | Eduardo Santamaría-García<sup>6</sup> |  
 Giulia Bastianelli<sup>6</sup> | Alba Márquez-Rodríguez<sup>6,8</sup> | Michał Budka<sup>9</sup> |  
 Gerard Bota<sup>1</sup>  | José M. De la Peña-Rubio<sup>10</sup> | Eladio L. García de la Morena<sup>11</sup> |  
 Manu Santa-Cruz<sup>12</sup> | Pablo de la Nava<sup>13</sup> | Mario Fernández-Tizón<sup>14</sup> |  
 Hugo Sánchez-Mateos<sup>15</sup> | Adrián Barrero<sup>16,17</sup>  | Juan Traba<sup>16,17</sup> |  
 Tomasz S. Osiejuk<sup>9</sup> | Patrick J. Hart<sup>18</sup> | Amanda K. Navine<sup>18</sup> |  
 Andrés F. Montoya Muñoz<sup>4</sup> | Carlos B. de Araujo<sup>19</sup> | Gabriel L. M. Rosa<sup>20</sup> |  
 Ingrid M. Denóbile Torres<sup>21</sup> | Ana L. Camargo Catalano<sup>21</sup> |  
 Cássio Rachid Simões<sup>21,22</sup> | Diego Llusia<sup>16,17,23</sup> | Manuel B. Morales<sup>16,17</sup> |  
 Pablo Acebes<sup>16,17</sup> | Juan A. Medina<sup>24</sup> | Nicholas Brown<sup>16,25</sup> |  
 Christos Astaras<sup>26</sup> | Ilias Karmiris<sup>26</sup> | Elizabeth Navarrete<sup>26</sup> |  
 Maxime Cauchoix<sup>27</sup> | Luc Barbaro<sup>28</sup>  | David Funosas<sup>29</sup> | Dominik Arend<sup>30</sup> |  
 Sandra Müller<sup>30</sup>  | Fernando González-García<sup>31</sup> | Alberto González-Romero<sup>31</sup> |  
 Christos Mammides<sup>32</sup>  | Michaelangelo Pontikis<sup>33</sup> | Giordano Jacuzzi<sup>34</sup> |  
 Julian D. Olden<sup>34</sup> | Sara P. Bombaci<sup>35</sup> | Gabriel Marcacci<sup>36</sup>  | Alain Jacot<sup>36</sup> |  
 Juan P. Zurano<sup>19</sup> | Elena Gangenova<sup>19</sup> | Diego Varela<sup>19</sup>  |  
 Facundo Di Sallo<sup>19</sup> | Gustavo A. Zurita<sup>19</sup>  | Andrey Atemasov<sup>37</sup> |  
 Junior A. Tremblay<sup>38</sup>  | Vincent Lamarre<sup>38</sup> | Anja Hutschenreiter<sup>39</sup> |  
 Alan Monroy-Ojeda<sup>40</sup> | Mauricio Díaz-Vallejo<sup>41,42</sup> | Sergio Chaparro-Herrera<sup>43</sup> |  
 Robert A. Briers<sup>44</sup>  | Renata Sousa-Lima<sup>45</sup> | Thiago Pinheiro<sup>45</sup> |  
 Wigna C. da Silva<sup>45</sup> | Alice Calvente<sup>46</sup> | Anamaria Dal Molin<sup>47</sup>  |  
 Alexandre Antonelli<sup>48,49,50</sup> | Svetlana Gogoleva<sup>51,52</sup> | Igo Palko<sup>52</sup> |  
 Hiếu Vũ Trọng<sup>52</sup> | Marina H. Lage Duarte<sup>53,54</sup> | Natalia dos Santos Saturnino<sup>54</sup> |  
 Samuel R. Silva<sup>54</sup> | Ana Rainho<sup>55</sup> | Paula Lopes<sup>55,56</sup> |  
 Karl-L. Schuchmann<sup>57,58</sup>  | Marinêz I. Marques<sup>57</sup>  | Ana S. de Oliveira<sup>57</sup> |

For affiliations refer to page 3

This is an open access article under the terms of the [Creative Commons Attribution-NonCommercial-NoDerivs](https://creativecommons.org/licenses/by-nc-nd/4.0/) License, which permits use and distribution in any medium, provided the original work is properly cited, the use is non-commercial and no modifications or adaptations are made.

© 2026 The Author(s). *Ecology* published by Wiley Periodicals LLC on behalf of The Ecological Society of America.

Nick A. Littlewood<sup>59</sup> | Mao-Ning Tuanmu<sup>60</sup>  | Yi-Ru Cheng<sup>60</sup> |  
Hsuan Chao<sup>60</sup> | Sebastian Kepfer-Rojas<sup>61</sup> | Andrea L. Aguilera<sup>62</sup> |  
Lluís Brotons<sup>1,63,64</sup> | Mariano J. Feldman<sup>1</sup> | Louis Imbeau<sup>65</sup> |  
Pooja Panwar<sup>66</sup> | Aaron S. Weed<sup>67</sup> | Anant Deshwal<sup>68</sup> |  
Raiane Vital da Paz<sup>69,70</sup>  | Carlos Salustio-Gomes<sup>69,70</sup> |  
Dorgival D. Oliveira-Júnior<sup>69,70</sup> | Cicero S. Lima-Santos<sup>69,70</sup> |  
Mauro Pichorim<sup>69,70</sup>  | Wuyuan Pan<sup>71</sup> | Eben Goodale<sup>72</sup>  |  
Alfredo Attisano<sup>73</sup> | Jörn Theuerkauf<sup>73</sup> | Esther Sebastián-González<sup>2,74</sup> 

#### Correspondence

Cristian Pérez-Granados  
Email: [cristian.perez@ctfc.cat](mailto:cristian.perez@ctfc.cat)

**Handling Editor:** Kathryn  
L. Cottingham

#### Abstract

Under the current global biodiversity crisis, there is a need for automated and noninvasive monitoring techniques that can gather large amounts of data cost-effectively at various ecological scales, from local to large spatial scales. These data can then be analyzed to inform stakeholders and decision-makers. One such technique is passive acoustic monitoring, which is commonly coupled with automatic identification of animal species based on their sound. Automated sound analyses usually require the training of sound detection and identification algorithms. These algorithms are based on annotated acoustic datasets which mark the occurrence of sounds of species inside sound recordings. However, compiling large annotated acoustic datasets is time-consuming and requires experts, and therefore, they normally cover reduced spatial, temporal, and taxonomic scales. This data paper presents WABAD, the World Annotated Bird Acoustic Dataset for passive acoustic monitoring. WABAD is designed to provide the public, the research community, and conservation managers with a novel and globally representative annotated acoustic dataset. This database includes 5047 min of audio files annotated to species-level by local experts with the start and end time and the upper and lower frequencies of each identified bird vocalization in the recordings. The database has a wide taxonomic and spatial coverage, including information on 91,931 vocalizations from 1192 bird species recorded at 72 recording sites in 29 recording locations (mainly countries) and distributed across 13 biomes. WABAD can be used, for example, for developing and/or validating automatic species detection algorithms, answering ecological questions, such as assessing geographical variations on bird vocalizations, or comparing acoustic diversity indices with species-based diversity indices. The dataset is published under a Creative Commons Attribution 4.0 International license that permits redistribution and reuse on the condition that the original work is properly credited.

#### KEYWORDS

animal vocalizations, automated sound recorder, autonomous recording units, birds, human expert annotation, passive acoustic monitoring, song, soundscape

**AFFILIATIONS**

- <sup>1</sup>Biodiversity Conservation and Management Programme, Forest Science and Technology Center of Catalonia (CTFC), Lleida, Spain
- <sup>2</sup>Department of Ecology, University of Alicante, Alicante, Spain
- <sup>3</sup>EFNO, INRAE, Nogent-sur-Vernisson, France
- <sup>4</sup>Programa de Biología, Universidad del Quindío, Armenia, Quindío, Colombia
- <sup>5</sup>Department of Plant Biology and Ecology, University of Sevilla, Seville, Spain
- <sup>6</sup>Doñana Biological Station (CSIC), ICTS-Doñana (Infraestructura Científico-Técnica Singular de Doñana), Seville, Spain
- <sup>7</sup>Complex Systems Group, Department of Agroforestry Engineering, ETSIAAB, Universidad Politécnica de Madrid, Madrid, Spain
- <sup>8</sup>Institute of Marine Research (INMAR), Centro CEIMAR, International Campus of Excellence in Marine Science (CEIMAR), Universidad de Cádiz, Cádiz, Spain
- <sup>9</sup>Department of Behavioural Ecology, Institute of Environmental Biology, Faculty of Biology, Adam Mickiewicz University, Poznań, Poland
- <sup>10</sup>Blue Nature Birding and Nature Tours SL, Madrid, Spain
- <sup>11</sup>Biodiversity Node, Sector Foresta, Madrid, Spain
- <sup>12</sup>Eurofins MITOX B.V., Amsterdam, Netherlands
- <sup>13</sup>SEO/BirdLife, Madrid, Spain
- <sup>14</sup>Instituto de Investigación en Recursos Cinegéticos, IREC-CSIC-UCLM-JCCM, Ciudad Real, Spain
- <sup>15</sup>Iduna Tours, Cáceres, Spain
- <sup>16</sup>Terrestrial Ecology Group (TEG-UAM), Departamento de Ecología, Universidad Autónoma de Madrid, Madrid, Spain
- <sup>17</sup>Centro de Investigación en Biodiversidad y Cambio Global (CIBC-UAM), Universidad Autónoma de Madrid, Madrid, Spain
- <sup>18</sup>Department of Biology, University of Hawai'i at Hilo, Hilo, Hawai'i, USA
- <sup>19</sup>Observatorio de Biodiversidad del Bosque Atlántico, Instituto de Biología Subtropical, CONICET-Universidad Nacional de Misiones, Puerto Iguazú, Argentina
- <sup>20</sup>Laboratório de Ornitologia e Bioacústica, Universidade Estadual de Londrina, Londrina, Brazil
- <sup>21</sup>ConservaSom, João Pessoa, Paraíba, Brazil
- <sup>22</sup>Programa de Pós-graduação em Biodiversidade e Evolução, Instituto de Biologia, Universidade Federal da Bahia, Salvador, Brazil
- <sup>23</sup>Laboratório de Herpetologia e Comportamento Animal, Departamento de Ecologia, Instituto de Ciências Biológicas, Universidade Federal de Goiás, Campus Samambaia, Goiânia, Goiás, Brazil
- <sup>24</sup>BUTEO Environmental Initiatives, Mojados, Valladolid, Spain
- <sup>25</sup>Department of Life Sciences, Imperial College London, London, UK
- <sup>26</sup>Forest Research Institute, ELGO-DIMITRA, Thessaloniki, Greece
- <sup>27</sup>Station d'Écologie Théorique et Expérimentale, SETE, CNRS, Moulis, France
- <sup>28</sup>Dynafor, INRAE, University of Toulouse, Castanet-Tolosan, France
- <sup>29</sup>Université Paul Sabatier - Toulouse III, Toulouse, France
- <sup>30</sup>Geobotany, Faculty of Biology, University of Freiburg, Freiburg, Germany
- <sup>31</sup>Red Biología y Conservación de Vertebrados, Instituto de Ecología, A.C., Veracruz, México
- <sup>32</sup>Nature Conservation Unit, Frederick University, Nicosia, Cyprus
- <sup>33</sup>Department of Biological Sciences, University of Cyprus, Nicosia, Cyprus
- <sup>34</sup>School of Aquatic and Fishery Sciences, College of the Environment, University of Washington, Seattle, Washington, USA
- <sup>35</sup>Department of Fish, Wildlife, and Conservation Biology, Colorado State University, Fort Collins, Colorado, USA
- <sup>36</sup>Swiss Ornithological Institute, Sempach, Switzerland
- <sup>37</sup>V.N.Karazin Kharkiv National University, Kharkiv, Ukraine
- <sup>38</sup>Environment and Climate Change Canada, Québec, Canada
- <sup>39</sup>Instituto de Investigaciones en Ecosistemas y Sustentabilidad, Universidad Autónoma de México, Morelia, Michoacan, Mexico
- <sup>40</sup>Kiekari Bird Observatory, KiekariTerra A.C., Xico, Veracruz, Mexico
- <sup>41</sup>Grupo de Ecología y Evolución de Vertebrados, Instituto de Biología, Universidad de Antioquia, Medellín, Colombia
- <sup>42</sup>Red de Biología Evolutiva, Instituto de Ecología, A.C., Xalapa, Veracruz, México
- <sup>43</sup>Proyecto Atlapetes, Antioquia, Colombia; Laboratorio de Ecología Evolutiva y Urbana, Universidad del Norte, Barranquilla, Colombia
- <sup>44</sup>Centre for Conservation and Restoration Science, School of Applied Sciences, Edinburgh Napier University, Sighthill Campus, Edinburgh, UK
- <sup>45</sup>EcoAcoustic Research Hub, Biosciences Center, Universidade Federal do Rio Grande do Norte, Campus Universitário, Natal, Rio Grande do Norte, Brazil
- <sup>46</sup>Departamento de Botânica e Zoologia, Universidade Federal do Rio Grande do Norte, Campus Universitário, Lagoa Nova, Natal, Rio Grande do Norte, Brazil

- <sup>47</sup>Department of Microbiology and Parasitology, Biosciences Center, Universidade Federal do Rio Grande do Norte, Natal, Rio Grande do Norte, Brazil
- <sup>48</sup>Royal Botanic Gardens, Richmond, Surrey, UK
- <sup>49</sup>Gothenburg Global Biodiversity Centre, Department of Biological and Environmental Sciences, University of Gothenburg, Göteborg, Sweden
- <sup>50</sup>Department of Biology, University of Oxford, Oxford, UK
- <sup>51</sup>Severtsov Institute of Ecology and Evolution of Russian Academy of Sciences, Moscow, Russian Federation
- <sup>52</sup>Southern Branch of the Joint Vietnam-Russia Tropical Science and Technology Research Center, HoChiMinh City, Vietnam
- <sup>53</sup>School of Science, Engineering and Environment, University of Salford, Manchester, UK
- <sup>54</sup>Graduate Program in Biodiversity and Environment, Pontifical Catholic University of Minas Gerais, Belo Horizonte, Brazil
- <sup>55</sup>CE3C-Centre for Ecology, Evolution and Environmental Changes, CHANGE-Global Change and Sustainability Institute & Departamento de Biologia Animal, Faculdade de Ciências, Universidade de Lisboa, Lisbon, Portugal
- <sup>56</sup>SPEA - Portuguese Society for the Study of Birds, Lisbon, Portugal
- <sup>57</sup>Computational Bioacoustics Research Unit (CO.BRA), Institute for Science and Technology in Wetlands (INAU), Federal University of Mato Grosso (UFMT), Cuiabá, Brazil
- <sup>58</sup>Ornithology, Zoological Research Museum A. Koenig (ZFMK), Bonn, Germany
- <sup>59</sup>Scotland's Rural College, Bucksburn, Aberdeen, UK
- <sup>60</sup>Biodiversity Research Center, Academia Sinica, Taipei, Taiwan
- <sup>61</sup>Department of Geosciences and Natural Resource Management, University of Copenhagen, Frederiksberg C. Copenhagen, Denmark
- <sup>62</sup>Centro de Datos para la Conservación, Centro de Estudios Conservacionistas, Universidad de San Carlos de Guatemala, Guatemala, Guatemala
- <sup>63</sup>CREAF, Cerdanyola del Vallès, Spain
- <sup>64</sup>CSIC, Cerdanyola del Vallès, Spain
- <sup>65</sup>Institut de recherche sur les forêts, Université du Québec en Abitibi-Témiscamingue, Rouyn-Noranda, Québec, Canada
- <sup>66</sup>Ecology, Evolution, Environment, and Society, Dartmouth College, Hanover, New Hampshire, USA
- <sup>67</sup>US Department of Interior, National Park Service, Northeast Temperate Network, Woodstock, Vermont, USA
- <sup>68</sup>Biology Department, Bradley University, Peoria, Illinois, USA
- <sup>69</sup>Programa de Pós- Graduação em Ecologia, Centro de Biociências, Universidade Federal do Rio Grande do Norte, Natal, Brazil
- <sup>70</sup>Laboratório de Ornitologia, Departamento de Botânica e Zoologia, Universidade Federal do Rio Grande do Norte, Natal, Brazil
- <sup>71</sup>Guangxi Key Laboratory of Forest Ecology and Conservation, College of Forestry, Guangxi University, Nanning, Guangxi, China
- <sup>72</sup>Department of Health and Environmental Science, Xi'an Jiaotong-Liverpool University, Suzhou, Jiangsu, China
- <sup>73</sup>Museum and Institute of Zoology, Polish Academy of Sciences, Warsaw, Poland
- <sup>74</sup>Instituto Multidisciplinar para el Estudio del Medio "Ramón Margalef", University of Alicante, Alicante, Spain

#### CONFLICT OF INTEREST STATEMENT

The authors declare no conflicts of interest.

#### DATA AVAILABILITY STATEMENT

Metadata are available as [Supporting Information](#). Due to size, the complete audio files, their annotations, and associated metadata are available in Zenodo at <https://doi.org/10.5281/zenodo.17293588>.

#### ORCID

*Cristian Pérez-Granados*  <https://orcid.org/0000-0003-3247-4182>

*Jon Morant*  <https://orcid.org/0000-0001-5702-2348>

*Oscar H. Marín-Gómez*  <https://orcid.org/0000-0002-0743-8350>

*Miguel A. Muñoz-Mohedano*  <https://orcid.org/0000-0001-6114-4460>


*Gerard Bota*  <https://orcid.org/0000-0001-9020-7272>

*Adrián Barrero*  <https://orcid.org/0000-0002-2980-1202>

*Luc Barbaro*  <https://orcid.org/0000-0001-7454-5765>

*Sandra Müeller*  <https://orcid.org/0000-0003-4289-755X>

*Christos Mammides*  <https://orcid.org/0000-0003-1747-175X>

*Gabriel Marcacci*  <https://orcid.org/0000-0002-2199-0141>

*Diego Varela*  <https://orcid.org/0000-0003-3123-6756>

*Gustavo A. Zurita*  <https://orcid.org/0000-0002-1341-3491>

*Junior A. Tremblay*  <https://orcid.org/0000-0003-4930-0939>

*Robert A. Briers*  <https://orcid.org/0000-0003-0341-1203>

Anamaria Dal Molin  <https://orcid.org/0000-0003-0633-3888>

Karl-L. Schuchmann  <https://orcid.org/0000-0002-3233-8917>


Marinêz I. Marques  <https://orcid.org/0000-0002-9890-8505>

Mao-Ning Tuanmu  <https://orcid.org/0000-0002-8233-2935>

Raiane Vital da Paz  <https://orcid.org/0000-0001-8951-9463>

Mauro Pichorim  <https://orcid.org/0000-0002-9340-9010>

Eben Goodale  <https://orcid.org/0000-0003-3403-2847>

Esther Sebastián-González  <https://orcid.org/0000-0001-7229-1845>

## 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:** Pérez-Granados, Cristian, Jon Morant, Kevin F. A. Darras, Oscar H. Marín-Gómez, Irene Mendoza, Miguel A. Muñoz-Mohedano, Eduardo Santamaría-García, et al. 2026. “WABAD: A World Annotated Bird Acoustic Dataset for Passive Acoustic Monitoring.” *Ecology* 107(2): e70317. <https://doi.org/10.1002/ecy.70317>