

## DATA ARTICLE

# SNAPSHOT USA 2019–2023: The First Five Years of Data From a Coordinated Camera Trap Survey of the United States

Brigit Rooney<sup>1</sup>  | Roland Kays<sup>2,3</sup>  | Michael V. Cove<sup>2</sup> | Alex Jensen<sup>2</sup>  | Benjamin R. Goldstein<sup>3</sup> | Christopher Pate<sup>1</sup> | Paula Castiblanco<sup>1</sup> | Maggie E. Abell<sup>4</sup> | Jessie Adley<sup>5</sup> | Briana Agenbroad<sup>6</sup> | Adam A. Ahlers<sup>7</sup> | Peter D. Alexander<sup>8</sup> | David Allen<sup>9</sup> | Maximilian L. Allen<sup>10</sup> | Jesse M. Alston<sup>11</sup> | Mohammad Alyetama<sup>3,12</sup> | Thomas L. Anderson<sup>13</sup> | Raul Andrade<sup>14</sup> | Christine Anhalt-Depies<sup>15</sup> | Cara L. Appel<sup>16,17</sup> | Leslie Armendariz<sup>7</sup> | Christopher R. Ayers<sup>18</sup> | Amy B. Baird<sup>19</sup> | Cara Bak<sup>20</sup> | Griffin Bandler<sup>21</sup> | Erin E. Barding<sup>22</sup> | Evan G. Barr<sup>23</sup> | Carolina Baruzzi<sup>24</sup> | Kelli Bashaw<sup>25</sup> | Silas C. Beers<sup>26</sup> | Jerrold L. Belant<sup>21</sup> | Emma Bell<sup>27</sup> | John F. Benson<sup>28</sup> | Anna Berg<sup>29</sup> | Dylan L. Bergman<sup>30</sup> | Brandon M. Bernhardt<sup>7</sup> | Meagan A. Bethel<sup>31</sup> | Tori Bird<sup>32</sup> | Amanda B. Bishop<sup>7</sup> | Daniel A. Bogan<sup>33</sup> | LaRoy Brandt<sup>34</sup> | Levin C. Brandt<sup>35</sup> | Aidan B. Branney<sup>36</sup> | Chloe Bratton<sup>14</sup> | Claire E. Bresnan<sup>1,37</sup> | Jarred M. Brooke<sup>38</sup> | Erin K. Buchholtz<sup>39</sup> | Frances Buderman<sup>40</sup>  | Alexandra D. Burnett<sup>11</sup> | Emily E. Burns<sup>31</sup> | Dominique A. Byrd<sup>7</sup> | Susan A. Cannella<sup>41</sup> | Kathleen A. Carey<sup>24</sup> | William A. Carlile<sup>42</sup> | Kellie L. Carter<sup>43</sup> | Brenna J. Cassidy<sup>44</sup> | Ivan Castro-Arellano<sup>45</sup> | Sara Cendejas-Zarelli<sup>46</sup> | Nilanjan Chatterjee<sup>47</sup> | Amanda E. Cheeseman<sup>48</sup> | Cary Chevalier<sup>49</sup> | M. Colter Chitwood<sup>50</sup> | Petros Chrysafis<sup>51</sup> | Bret Aaron Collier<sup>52</sup> | D. Parks Collins<sup>14</sup> | Justin A. Compton<sup>53</sup> | Rhea Cone<sup>54</sup> | L. Mike Conner<sup>55</sup> | Brianna L. Cook<sup>29</sup> | Olivia G. Cosby<sup>1,56</sup> | Stephanie S. Coster<sup>57</sup> | Anthony P. Crupi<sup>58</sup> | Andrea K. Darracq<sup>23</sup> | Jon M. Davenport<sup>59</sup> | Devin Davis<sup>14</sup> | Drew R. Davis<sup>60,61</sup> | Miranda L. Davis<sup>62</sup> | Rebecca J. Davis<sup>63</sup> | Brett A. DeGregorio<sup>64</sup> | Anant Deshwal<sup>29</sup> | Kyle D. Dougherty<sup>28</sup> | Art Drauglis<sup>65</sup> | Caleb J. Durbin<sup>7</sup> | Andrew J. Edelman<sup>66</sup> | Valerie Elder<sup>67</sup> | Blakely Eller<sup>68</sup> | E. Hance Ellington<sup>69</sup> | Susan N. Ellis-Felege<sup>35</sup> | Caroline N. Ellison<sup>25</sup> | Jean E. Fantle-Lepczyk<sup>70</sup> | Jonathan J. Farr<sup>44</sup> | Zach J. Farris<sup>59</sup> | Shannon P. Finnegan<sup>71,72</sup> | M. Caitlin Fisher-Reid<sup>73</sup> | Elizabeth A. Flaherty<sup>38</sup> | Gabriela Franzoi Dri<sup>74</sup> | Sarah Fritts<sup>45</sup> | Jeremy Fuller<sup>75</sup> | Travis Gallo<sup>76</sup> | Laken S. Ganoe<sup>5</sup> | Carissa N. Ganong<sup>49</sup> | Ricky Garibay<sup>77</sup> | Brian D. Gerber<sup>5</sup> | Francis D. Gerraty<sup>78</sup> | Sean T. Gierzy<sup>75</sup> | Selena M. Gilyot<sup>7</sup> | Jessica L. Glasscock<sup>79</sup> | Ben Goldfarb<sup>80</sup> | Louis E. Good<sup>81</sup> | Gracie Granados<sup>68</sup> | Austin M. Green<sup>82,83</sup> | Jasmine K. Grewal<sup>28</sup> | Andrew Grusenmeyer<sup>84</sup> | Joseph M. Guthrie<sup>85</sup> | Matthew T. Hallett<sup>86,87</sup> | Chris Hansen<sup>44</sup> | Lonnie P. Hansen<sup>88</sup> | Clae Hanson<sup>14</sup> | Eamon J. Harrity<sup>31</sup> | Steven C. M. Hasstedt<sup>89</sup> | Mark Hebblewhite<sup>44</sup> | Daniel J. Herrera<sup>76</sup> | Angela Holland<sup>90</sup> | Brigit R. Humphreys<sup>74</sup> | Heide D. Island<sup>91</sup> | Alexander R. Jack<sup>47</sup> | Emily P. Johansson<sup>92</sup> | Alex M. Johnson<sup>93</sup> | Luanne Johnson<sup>26</sup> | Tamara L. Johnstone-Yellin<sup>94</sup> | Maria Luisa S. P. Jorge<sup>95</sup> | Willaine Kahano<sup>96</sup> | Michael A. Kinsey<sup>56</sup> | Brier E. Klossing<sup>45</sup> | Travis W. Knowles<sup>97</sup> | Molly M. Koeck<sup>50</sup> | John L. Koprowski<sup>6,11</sup> | Kellie M. Kuhn<sup>89</sup> | Erin K. Kuprewicz<sup>62,98</sup> | Diana J. R. Lafferty<sup>81</sup> | Jessica A. Lambertson-Moreno<sup>84</sup> | Travis J. Land<sup>41</sup> | Avy M. Langston<sup>68</sup> | Scott LaPoint<sup>99,100</sup> | Erin N. Largent<sup>101</sup> | Marcus A. Lashley<sup>86</sup> | Richard G. Lathrop<sup>102</sup> | Thomas E. Lee Jr<sup>68</sup> | Christopher A. Lepczyk<sup>70</sup> | Damon B. Lesmeister<sup>16,17</sup> | Carissa Leung<sup>62</sup> | Jason V. Lombardi<sup>36</sup> | Robert Long<sup>103</sup> | Robert C. Lonsinger<sup>104</sup>  | Isaac Lord<sup>92,105</sup> | Steven S. Madere<sup>52</sup> | Sean P. Maher<sup>106</sup>  | Jenifer A. Mallinoff<sup>59</sup> | Andres Martinez<sup>84</sup> | David S. Mason<sup>86</sup> | Heather A. Mathewson<sup>77</sup> | Amy E. Mayer<sup>5</sup> | Kyle P. McCarthy<sup>90</sup> | Shawn F. McCracken<sup>63</sup> | Brandon McDonald<sup>105</sup> | Brendan McGarry<sup>107</sup> | Sierra T. McMurry<sup>3</sup> | Leah E. McTigue<sup>92</sup> | Brianna Marie Mena<sup>45</sup> | Margaret Mercer<sup>11</sup> | Margaret R. Merz<sup>74</sup> | Sophie Millar<sup>108</sup> | Geoffrey D. Miller<sup>47</sup> | Joshua J. Millspaugh<sup>44</sup> | Remington J. Moll<sup>109</sup> | Tony W. Mong<sup>110</sup> | Javier D. Monzón<sup>111</sup> | John C. Moore<sup>13</sup> | Alessio Mortelliti<sup>74,112</sup> | Kelton W. Mote<sup>113</sup> | Kayleigh Mullen<sup>32</sup> | Alexis Mychajliw<sup>9</sup> | Christopher Nagy<sup>114</sup> | Sean A. Neiswenter<sup>96</sup> |

Aside from the SNAPSHOT USA organizational team based out of the Smithsonian Conservation Biology Institute and North Carolina Museum of Natural Sciences, all authors contributing data were listed in an alphabetical order.

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For affiliations refer to page 30.

Drew R. Neyland<sup>115</sup> | Laura P. Nicholson<sup>116</sup> | M. Teague O'Mara<sup>117</sup> | Brian J. O'Neill<sup>118</sup> | Elizabeth A. Olson<sup>26</sup> | Michael J. Orgill<sup>63</sup> | Gabriela Palomo-Munoz<sup>76</sup> | Shawn M. Parsons<sup>44</sup> | Lorelei E. Patrick<sup>119,120</sup> | Jessica R. Patterson<sup>22</sup> | David L. Pearce<sup>121</sup> | Mary E. Pendergast<sup>83</sup> | Bianca S. Perla<sup>107</sup> | Tyler R. Petroelje<sup>101</sup> | Henry Pliske<sup>95</sup> | Mairi K. P. Poisson<sup>109</sup> | Melissa R. Price<sup>122</sup> | Mike D. Proctor<sup>123</sup> | Nathan J. Proudman<sup>10</sup> | Janet L. Rachlow<sup>124</sup> | Ramon E. Ramos<sup>68</sup> | Miguel Reabold<sup>29</sup> | Joseph Redinger<sup>105</sup> | Adar E. Reed<sup>125</sup> | Christine C. Rega-Brodsky<sup>126</sup> | Evan Rehm<sup>127,128</sup> | Kathryn R. Remine<sup>103</sup> | Michael S. Rentz<sup>129</sup> | Elizabeth Ridder<sup>130</sup> | Derek R. Risch<sup>122</sup> | Lydia L. Robbins<sup>7</sup> | Justin P. Roemer<sup>131</sup> | Andrea Romero<sup>118</sup> | Christopher Rota<sup>132</sup> | Christopher M. Schalk<sup>133</sup> | Bradley D. Scholten<sup>3</sup> | Christina L. Scott<sup>134</sup> | Brandon M. Scurlock<sup>135</sup> | Maksim Sergeev<sup>36</sup> | William J. Severud<sup>48</sup> | Jennifer Sevin<sup>136</sup> | Hila Shamon<sup>1</sup> | Conan Sharp<sup>111</sup> | Michael Shaw<sup>92</sup> | Veronica Siverls-Dunham<sup>137</sup> | Austin B. Smith<sup>6</sup> | Daniel S. Smith<sup>108</sup> | Matthew H. Snider<sup>3</sup> | Daniel A. Sossover<sup>2,3</sup> | Adia R. Sovie<sup>21</sup> | J. Alan Sparks<sup>123</sup> | Jessica Speiser<sup>48</sup> | Matthew T. Springer<sup>4</sup> | Jared L. Spurlin<sup>138</sup> | Eric A. Steinkamp<sup>93</sup> | Jennifer L. Stenglein<sup>15</sup> | Joanne Stewart Kloker<sup>139</sup> | Cassie M. Stitzman<sup>81</sup> | Michael Stokes<sup>27</sup> | Khloey Stringer<sup>126</sup> | Johnathon Stutzman<sup>6</sup> | Daniel S. Sullins<sup>7</sup> | Cassandra Sullivan<sup>140</sup> | Noah B. Sullivan<sup>141</sup> | Evan P. Tanner<sup>36</sup> | Ashley M. Tanner<sup>36</sup> | Emily B. Thornock<sup>68</sup> | Jack Titus<sup>14</sup> | Jacquelyn M. Tleimat<sup>63</sup> | Kenny Toomey<sup>14</sup> | Luke T. Toussaint<sup>118</sup> | Michael Uribe<sup>111</sup> | Marius Van der Merwe<sup>142</sup> | Dakota J. Van Parys<sup>127</sup> | John P. Vanek<sup>143</sup> | Johanna Varner<sup>144</sup> | Brienna V. Walker<sup>7</sup> | Cody Wallace<sup>6</sup> | David Ward<sup>145</sup> | Bethany H. Warner<sup>71</sup> | Derick T. Warren<sup>123</sup> | Joanne R. Wasdin<sup>146</sup> | Stephen L. Webb<sup>121,147</sup> | Katelyn L. Wehr<sup>148</sup> | Nathaniel H. Wehr<sup>148</sup> | Emily G. Weigel<sup>41</sup> | Ty J. Werdel<sup>121</sup> | Laura S. Whipple<sup>81</sup> | Christopher A. Whittier<sup>149</sup> | Chloe Wiersema<sup>48</sup> | Andrew Mark Wilson<sup>150</sup> | Margaret F. H. Wilson<sup>48</sup> | Alexander J. Wolf<sup>108</sup> | Justin P. Wolford<sup>33</sup> | David W. Wolfson<sup>47</sup> | Daniel J. Woolsey<sup>36</sup> | Matthew Alan Wuensch<sup>145</sup> | Gloria Xu<sup>71</sup> | Kerry L. Yurewicz<sup>141</sup> | Veronica Zanchi<sup>95</sup> | Marketa Zimova<sup>75</sup> | Adam Zorn<sup>151</sup> | William J. McShea<sup>1</sup>

**Correspondence:** Brigit Rooney (rooneybr@si.edu)

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## ABSTRACT

**Motivation:** SNAPSHOT USA is an annual, multicontributor camera trap survey of mammals across the United States. The growing SNAPSHOT USA dataset is intended for tracking the spatial and temporal responses of mammal populations to changes in land use, land cover and climate. These data will be useful for exploring the drivers of spatial and temporal changes in relative abundance and distribution, as well as the impacts of species interactions on daily activity patterns.

**Main Types of Variables Contained:** SNAPSHOT USA 2019–2023 contains 987,979 records of camera trap image sequence data and 9694 records of camera trap deployment metadata.

**Spatial Location and Grain:** Data were collected across the United States of America in all 50 states, 12 ecoregions and many ecosystems.

**Time Period and Grain:** Data were collected between 1st August and 29th December each year from 2019 to 2023.

**Major Taxa and Level of Measurement:** The dataset includes a wide range of taxa but is primarily focused on medium to large mammals.

**Software Format:** SNAPSHOT USA 2019–2023 comprises two .csv files. The original data can be found within the SNAPSHOT USA Initiative in the Wildlife Insights platform.

## 1 | Introduction

As global biodiversity continues to decline, it is essential that we accurately monitor the abundance and distribution of wildlife communities through time (O'Connor et al. 2020). Whereas public databases and aggregator platforms can accommodate and collate data from diverse taxa collected by professionals (e.g., North American Breeding Bird Survey [BBS], Global Biodiversity Information Facility [GBIF]) or community crowdsourcing (e.g., iNaturalist), most of these data do not account for survey effort to assess pseudo-absences. Even when some public platforms such as eBird can account for survey effort (Callaghan and Gawlik 2015), in most cases, the species of interest are easily detectable compared to mammals that might be elusive, be nocturnal and exhibit large home ranges—traits that make them difficult to detect. Due to these difficulties, mammal abundance and distribution data are frequently collected by camera traps, as they are now widely used and highly effective survey tools (Wearn and Glover-Kapfer 2019) with the added benefit of accounting for survey effort. However, most camera trap surveys are significantly smaller in spatial and/or temporal scale than those collected by large-scale public platforms (Cove et al. 2021).

The SNAPSHOT USA project was created in 2019 as a grass-roots effort to accomplish long-term mammal monitoring goals sustainably by leveraging large-scale collaboration between researchers at diverse institutions across the United States. As the only coordinated and standardised camera trap survey in the United States with data from all 50 states, SNAPSHOT USA is innovative, highly cooperative and a valuable contribution to conservation. The project objectives are to annually collect camera trap data across the country by using a unified protocol and to produce data that can be used to examine nationwide trends of mammal communities in relation to environmental and anthropogenic factors. The data collection period is September through October each year and, although the focus is on mammal species, SNAPSHOT USA contributors identify all species, and these identifications are retained in the dataset.

The project also aims to facilitate collaborations among contributors, foster community engagement in science and

conservation and ensure the database is available for public use in research, management and education applications. To date, the project has recorded over 778,000 observations of free-ranging mammals submitted by collaborators from over 150 different institutions across all 50 states. Collaborating institutions include public and private colleges and universities, high schools, federal and tribal government agencies and non-profit organisations. The resulting data provide a snapshot of the nation's mammal community each year and have already been used to explore a wide variety of research questions, including the responses of diverse mammal species to changes in human activity (Burton et al. 2024), the effects of invasive species abundance on native wildlife activity patterns (Dykstra et al. 2023) and the impact of predator presence on activity patterns of prey species (Clipp et al. 2024).

Here, we present the complete SNAPSHOT USA dataset to date: the result of five consecutive years of this coordinated camera trap survey. Although the first 3 years of data have been previously published (Cove et al. 2021; Kays et al. 2022; Shamon et al. 2024), they are standardised in this dataset to account for changes over the years in species taxonomy, camera array names and camera location names.

## 2 | Methods

### 2.1 | Data Collection Protocol and Coordination

The first three annual SNAPSHOT USA surveys were coordinated by Roland Kays, Michael Cove and William McShea. The 2019, 2020 and 2021 datasets are accessible for public use through the Supporting Information of their respective publications. Although the 2019 and 2020 surveys were originally processed and stored in eMammal (<https://www.emammal.si.edu>), all data are now housed in Wildlife Insights (WI) (Ahumada et al. 2020) within the SNAPSHOT USA Initiative. The two most recent surveys, 2022 and 2023, were coordinated by the SNAPSHOT USA Survey Coordinator Brigit Rooney. This article represents the first publication of 2022 and 2023 SNAPSHOT USA data, and the listed coauthors contributed data to one or both of those surveys.

The SNAPSHOT USA project developed a standard protocol in 2019 to survey mammals > 100g and large identifiable birds (Cove et al. 2021). Cameras are unbaited and set at approximately 50cm height across an array of at least 7 cameras with a minimum distance of 200m and maximum of 5km between them. The collection period for SNAPSHOT USA data is between September and October, and the target minimum of camera trap-nights per array is 400. Some contributors to SNAPSHOT USA 2019–2023 started collecting data earlier or deployed cameras later based on locations or logistics, and we chose to include data from 1st August to 29th December each year in this dataset.

The camera trap arrays, referred to as subprojects in the WI camera trap repository, were characterised by one combination of habitat type and development level, as determined by each subproject Principal Investigator. If cameras were set facing roads, trails or water, this is noted in the metadata. SNAPSHOT USA arrays vary in size, the number of cameras deployed in each array and the spatial design of the camera array—a characteristic adopted to encourage contributions by many researchers that might have different goals in their specific study designs. Collaborators are encouraged to sample the same locations every year, but this is not a requirement to participate in the project.

All survey contributors deployed camera traps that are motion-sensitive and infrared, with fast (<0.5s) trigger speeds. Cameras were set to take 1–10 photos per trigger and without a quiet period between triggers. Approved cameras were any of the following models, or one of equal or greater quality by that brand: Browning (Strike Force Elite HD, 2017 Strike Force HD Pro), Bushnell (Trophy Cam HD, Essential, Aggressor), Moultrie (M-999I, M-1100i), Primos (Proof Cam 02, Proof Cam 03), Reconyx (all models), Spypoint (Solar, Force 10, Force 11D, Force GM) and Stealth Cam (G45NP Pro, G42NG). Any use of trade, firm or product names is for descriptive purposes only and does not imply endorsement by the U.S. Government.

## 2.2 | Data Verification

The first two years of SNAPSHOT USA data incorporated an Expert Review Tool to verify the accuracy of every identification, as that was built in to the eMammal repository. This tool required SNAPSHOT USA project managers (Cove and Kays in 2019, with more taxon-specific reviewers in 2020) to review and confirm all species identifications, in an effort to minimise identification errors. As eMammal automatically grouped all uploaded images into ‘sequences’ of images taken within 60s of each other, by using the image timestamps, species identifications were made for individual sequences rather than images. These data have since been transferred to WI, where they underwent opportunistic review and correction by the SNAPSHOT USA Survey Coordinator.

In contrast, SNAPSHOT USA 2021, 2022 and 2023 were managed and identified entirely in WI. All SNAPSHOT USA projects in this repository were created as ‘Sequence’ projects to enable identification of sequences in the same manner as eMammal. Each 60-s sequence of images was classified to the narrowest taxonomic level possible by three iterations of validation. First, WI’s Artificial Intelligence algorithm suggested

a taxonomic identification. This algorithm consists of a multi-class classification deep convolutional neural network model that uses pretrained image embedding from Inception, a model used to identify objects (Ahumada et al. 2020). Second, each array’s Principal Investigator was responsible for validating the data, fixing Artificial Intelligence identification mistakes and approving the data they contributed to the survey. Lastly, the SNAPSHOT USA Survey Coordinator quality checked the deployment data and as many identified sequences as possible. This was a multistep process that began with checking the sequence metadata for obvious timestamp errors by organising them chronologically in Microsoft Excel and the deployment metadata for location errors by mapping their coordinates and looking for outliers. Next, the coordinator checked the sequence metadata for unlikely identifications, including species detections in places outside their known range, and verified their accuracy by viewing the images in WI. Finally, identifications for the most common species were verified by using the ‘Species’ filter on WI to look for mistakes, one species at a time.

## 2.3 | Data Standardisation

When combining the 5 years of SNAPSHOT USA data to create SNAPSHOT USA 2019–2023, several aspects of the data were standardised to ensure consistency across all years. These were camera array names, camera location names and taxonomy classifications. To match protocol requirements, all camera locations less than 5km apart were classified as one array. This resulted in combining several arrays that were originally recorded under different names and ensuring that arrays in the same place maintained the same name each year. The camera location names were standardised by ensuring that all locations with geographic coordinates that were the same to four decimal places, in Decimal Degrees notation, had the same name. However, the original coordinates were retained in the dataset. Finally, all species taxonomy classifications for the 2019 and 2020 datasets (identified in eMammal) were standardised to match those used by WI. As part of this process, all subspecies of mammals in the dataset were changed to species level (e.g., Florida black bear (*Ursus americanus floridanus*) became American black bear (*Ursus americanus*)).

For mammal taxonomy classifications, WI uses a combination of the International Union for Conservation of Nature (IUCN) Red List of Threatened Species (2023; <https://iucnredlist.org>) and the American Society of Mammalogists Mammal Diversity Database (2024; <https://www.mammaldiversity.org>). For bird species, WI uses Birdlife International’s taxonomy classifications (2024; <https://datazone.birdlife.org/species/search>). The WI taxonomy is continually updated in response to public user suggestions, and the taxonomy used in the SNAPSHOT USA 2019–2023 dataset reflects the WI taxonomy used in June 2024.

## 2.4 | Data Use Guidelines and Data Availability

The SNAPSHOT USA 2019–2023 dataset comprises two .csv files. The first file, ‘SNAPSHOT\_USA\_Sequences.csv’, contains the species identification data, including taxonomic information and common name, for all sequences of images contributed to

**TABLE 1** | Variable information for sequence data from SNAPSHOT USA 2019–2023.

| <b>Variable</b>   | <b>Potential categories</b>  | <b>Definition/Meaning</b>  |
|-------------------|--|--|
| Year              | Double precision vector between 2019 and 2023  | Each year represents the year the associated data were collected   |
| Project           | One of 20 potential text strings representing the different WI project names herein  | Each project is managed separately on WI   |
| Camera_Trap_Array | One of 263 potential text strings representing the different camera trap arrays herein   | Each camera trap array represents one subproject on WI   |
| Deployment_ID     | One of 9694 potential text strings associated with specific camera trap deployments across sites   | Unique identifier for a camera trap deployment from WI. Most sites are associated with a single Deployment_ID, but camera photos could be uploaded in batches corresponding with multiple WI deployments from the same site                              |
| Sequence_ID       | Text string associated with a specific observation from a camera trap site   | Unique identifier for a camera trap observation. Observations are a sequence of all camera trap photos within 1 min of a single camera trigger. Multiple species will be identified in separate rows for the same Sequence_ID, so Sequence_ID can repeat |
| Start_Time        | Date and time stamp associated with a camera trap observation provided in the following format: 'YYYY-MM-DD HH:MM:SS'. Start_Time values are between '2019-08-17 00:05:00' and '2023-12-21 14:37:54' | Timestamp of first camera trap photo in each camera trap sequence  |
| End_Time          | Date and time stamp associated with a camera trap observation provided in the following format: 'YYYY-MM-DD HH:MM:SS'. End_Time values are between '2019-08-17 00:05:00' and '2023-12-21 14:38:17'   | Timestamp of last camera trap photo in each camera trap sequence   |
| Class             | One of seven potential text strings associated with different taxonomic classes  | Taxonomic class of animal observed in the sequence   |
| Order             | One of 37 potential text strings associated with different taxonomic orders  | Taxonomic order of animal observed in the sequence   |
| Family            | One of 93 potential text strings associated with different taxonomic families  | Taxonomic family of animal observed in the sequence  |
| Genus             | One of 247 potential text strings associated with different taxonomic genera   | Taxonomic genus of animal observed in the sequence   |
| Species           | One of 315 potential text strings associated with different specific epithets that distinguish a species within a genus  | Taxonomic specific epithet that distinguishes the species within the genus of animal observed in the sequence  |
| Common_Name       | Text string of species common names  | Common name of the species observed in the sequence  |

(Continues)

**TABLE 1** | (Continued)

| Variable   | Potential categories                              | Definition/Meaning   |
|------------|---|--|
| Age        | Text string, options are Adult, Juvenile, Unknown | Age category of animal observed, if distinguishable by observer. Default is unknown since this was not consistently recorded |
| Sex        | Text string, options are female, male, unknown    | Sex category of animal observed, if distinguishable by observer. Default is unknown since this was not consistently recorded |
| Group_Size | Integer between 1 and 50                          | Number of individuals observed in a single camera trap sequence observation  |

**TABLE 2** | Variable information for deployment data from SNAPSHOT USA 2019–2023.

| Variable          | Potential categories  | Definition/Meaning  |
|-------------------|---|---|
| Year              | Double precision vector between 2019 and 2023   | Each year represents the year the associated data were collected  |
| Project           | One of 20 potential text strings representing project name on WI  | Each project is managed separately on WI  |
| Camera_Trap_Array | One of 263 potential text strings representing the different camera trap arrays herein                                    | Each camera trap array represents a subproject in WI  |
| Site_Name         | One of 6712 potential text strings associated with specific camera trap locations within each subproject                  | Name of each camera trap location in each subproject  |
| Deployment_ID     | One of 9694 potential text strings associated with specific camera trap deployments                                       | Unique identifier for a camera trap deployment from WI. Most locations are associated with a single Deployment_ID, but camera photos could be uploaded in batches corresponding with multiple WI deployments from the same location |
| Start_Date        | Date camera was placed provided in the format: 'YYYY-MM-DD'. Start_Date values are between '2019-08-17' and '2023-11-22'  | Date of the camera trap deployment  |
| End_Date          | Date camera was retrieved provided in the format: 'YYYY-MM-DD'. End_Date values are between '2019-08-28' and '2023-12-21' | Date of the camera trap retrieval   |
| Survey_Nights     | Number of nights the camera was active at that site   | Number of nights the camera was active at that site   |
| Latitude          | Double precision vector between 21.3562 and 59.4526   | Latitude value of camera trap site location. All geographic coordinates are provided in decimal degrees (WGS 84)  |
| Longitude         | Double precision vector between -157.7496 and -68.6116  | Longitude value of camera trap site location. All geographic coordinates are provided in decimal degrees (WGS 84)   |
| Habitat           | One of seven potential text strings associated with habitat types   | Provided by contributing authors, this indicates if the array was classified as forest, grassland, shrubland, chaparral, desert, wetland or beach   |
| Development_Level | One of four potential text strings associated with development levels   | Provided by contributing authors, this indicates if the array was classified as wild, rural, suburban or urban  |
| Feature_Type      | One of 18 potential text strings associated with feature types  | Denotes any potential features at the camera site, including water source, road (dirt or paved) and trail (game or hiking)  |

SNAPSHOT USA from 2019 to 2023 (Table 1). The second file, ‘SNAPSHOT\_USA\_Deployments.csv’, contains the camera trap metadata for each SNAPSHOT USA deployment from 2019 to 2023 (Table 2).

The SNAPSHOT USA 2019–2023 data are available for public use and has no copyright restrictions, but please cite this paper when using these data, or a subset of these data, for publication. These data will be accessible through Dryad upon acceptance of this manuscript, while the original data are housed as separate projects within the SNAPSHOT USA Initiative in WI.

### 3 | Description of the Data

#### 3.1 | Geographic Range of Detections

Data were collected across 263 unique camera trap arrays, consisted of 6712 camera sites from all 50 states and represent most ecoregions (Bailey 2016) across the United States (Figure 1a). Although SNAPSHOT USA aims to sample all ecoregions equally in proportion to their area, the ratio of camera trap arrays to ecoregion size varies significantly (0.99–6.70 arrays per 100,000 km<sup>2</sup>) (Figure 1b). The tundra ecoregion in the Alaska interior has not been sampled, while the temperate desert and temperate steppe ecoregions, covering much of the western and midwestern United States, contain the fewest arrays per 100,000 km<sup>2</sup>.

#### 3.2 | Sampling Effort

Sampling effort, represented by the number of camera trap nights, varied between camera trap arrays and years, with a minimum of 81 trap-nights in a single year, a maximum of

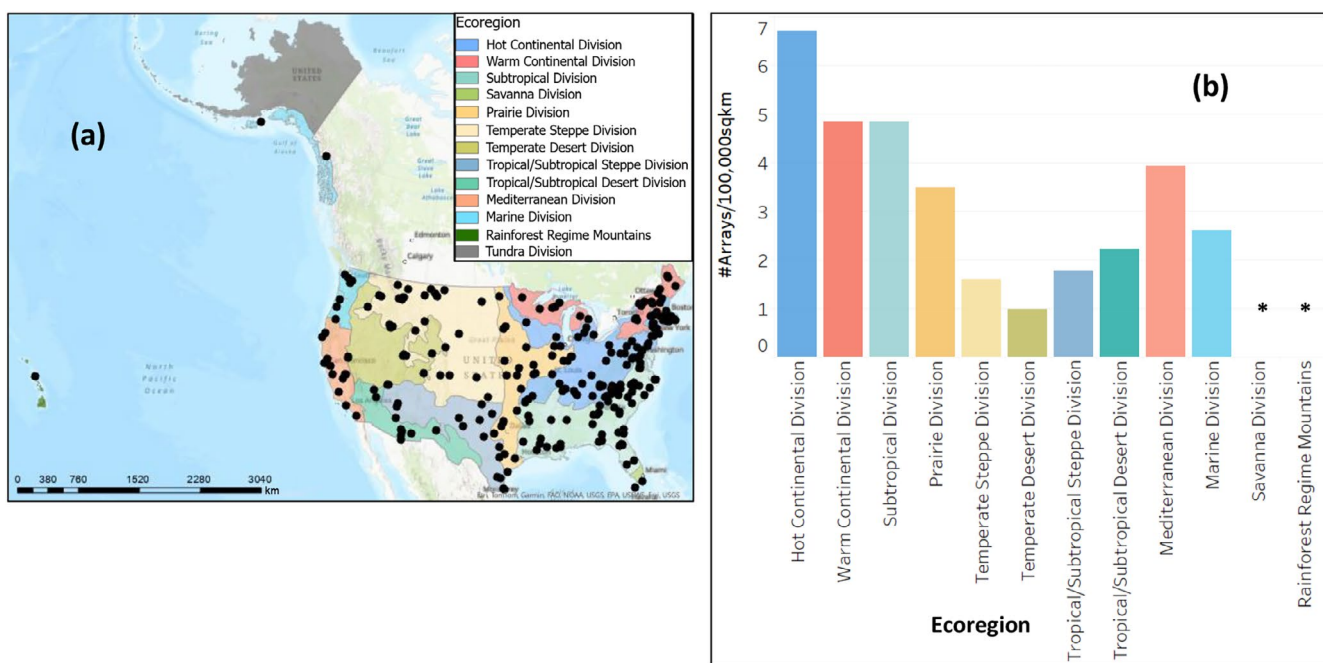
3355 trap-nights, a median of 525 trap-nights and a mean of 630 (SD = 401) trap-nights. The number of years each array was surveyed also varied, with 42 arrays having been surveyed all 5 years (Figure 2a). Total effort equalled 371,979 camera trap-nights and resulted in 946,768 observations of wild and domestic mammals, birds and humans. Of these, 778,547 were wild mammals identified to species level. The median start date across years was 9 September and the median end date was 25 October. The number of sites surveyed each year varied between arrays (4–158) and 128 arrays did not reach the target minimum of 400 camera trap-nights, but we included their data in the final dataset. The total sampling effort for each array can be found in Table 3.

#### 3.3 | Taxonomic Range of Detections

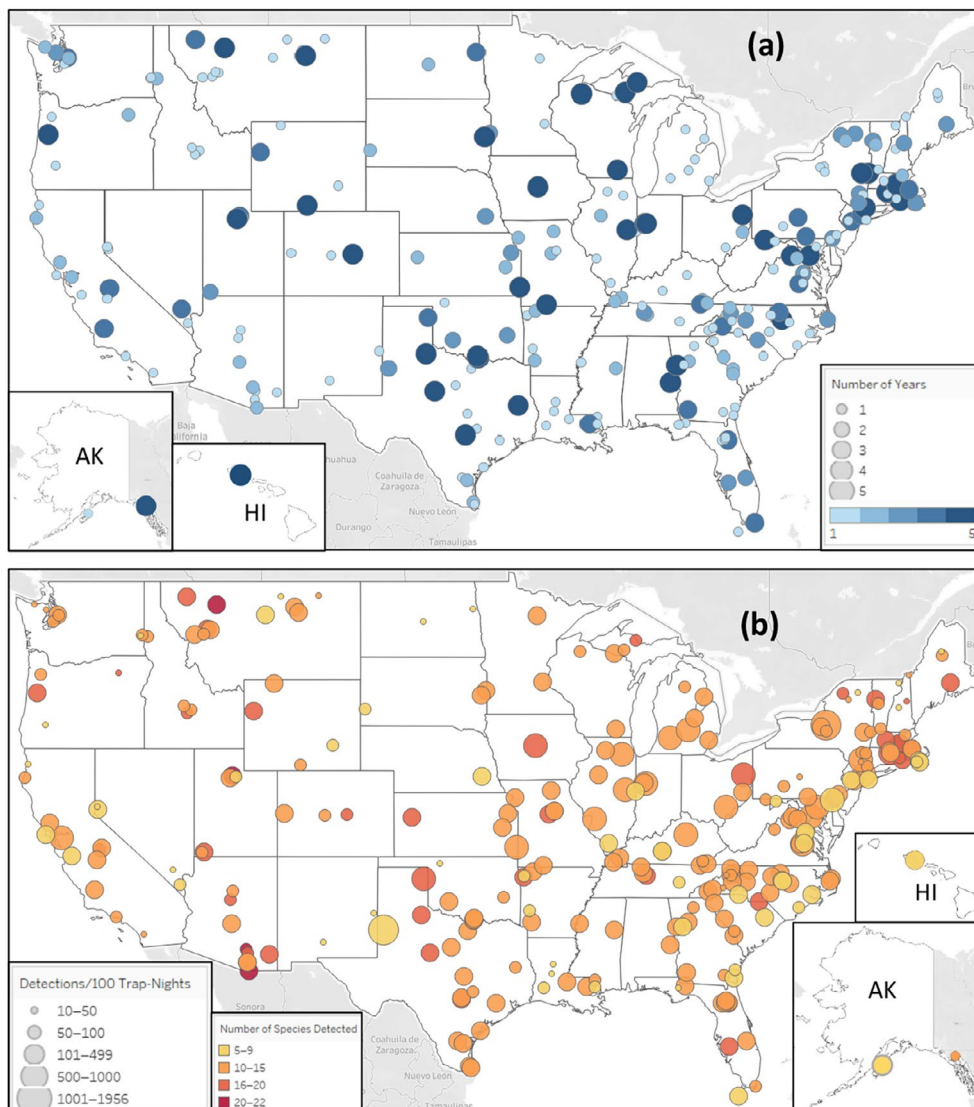
Although SNAPSHOT USA is targeted at detecting mammal species, observations of all other animal species were retained in the dataset (Table 4). These include 131 distinct mammal species and 225 bird species. Species richness at arrays ranged from a minimum of 5 to a maximum of 22 mammal and large ground bird species detected in a single year (Figure 2b). The top five species detected per 100 camera trap-nights were white-tailed deer (*Odocoileus virginianus*), eastern gray squirrel (*Sciurus carolinensis*), northern raccoon (*Procyon lotor*), eastern fox squirrel (*Sciurus niger*) and coyote (*Canis latrans*) (Figure 3). Each detection refers to one sequence of camera trap images taken within 1 min of a single camera trigger.

### 4 | Discussion

The SNAPSHOT USA project protocol has been applied in recent years by other countries and continents, and we hope



**FIGURE 1** | (a) The median centres of all 263 SNAPSHOT USA 2019–2023 camera trap arrays overlaying a simplified derivation of Bailey's ecoregions (Bailey 2016) in the United States; ecoregions currently represented by SNAPSHOT USA are in colour, while ecoregions that lack surveys are in grey. (b) Number of arrays per 100,000 km<sup>2</sup> (\*ecoregions under 100,000 km<sup>2</sup>).



**FIGURE 2** | (a) Map of the United States showing all 263 SNAPSHOT USA 2019–2023 camera trap arrays, with their colour and size representing the number of years the array was surveyed. (b) The same map showing all the arrays, with colour representing the maximum number of identified mammal and large ground bird species in a single survey year and size representing the number of detections of those species per 100 camera trap-nights observed within the array that year. Only detections of mammals and large ground birds (wild turkey (*Meleagris gallopavo*), grouse (*Canachites* spp., *Bonasa* spp., *Tympanuchus* spp., *Dendragapus* spp., *Centrocercus* spp.) or quail (*Callipepla* spp., *Oreortyx* spp.)) identified to species level were used to obtain these values, and each detection represents one sequence of images captured by a camera.

these initiatives continue expanding to improve global biodiversity monitoring to meet conservation objectives. The projects SNAPSHOT EUROPE and SNAPSHOT JAPAN have both collected and collated camera trap data from 2021 to 2023 and 2023, respectively. After the successful launch of SNAPSHOT EUROPE, the SNAPSHOT GLOBAL platform (<https://snaphot-global.org>) was founded in 2022 to reach broader audiences in recruitment and help connect a network of global camera trappers to public data. Other collaborative networks exist, such as the Tropical Ecology Assessment and Monitoring (TEAM) network, UWIN (Urban Wildlife Institute Network) and EUROMAMMALS, and we encourage these groups and others to partner with SNAPSHOT networks to increase our understanding of the impacts of humans on the environment and increase our capacity in biodiversity conservation across the globe.

Despite the diversity of institutions that have contributed to SNAPSHOT USA, the SNAPSHOT USA 2019–2023 data were mostly collected by academic institutions. We are actively working to recruit more contributors within other sectors, including federal and tribal government agencies, to broaden the scope of the project. However, we realise that the large number and diversity of collaborators likely contribute to several nuisance variables that may impact detection probability, such as the experience of field crews deploying cameras and the quality of the camera model(s) used. Therefore, we recommend the use of hierarchical models that accommodate and account for detection bias using standard approaches and guidelines (Goldstein et al. 2024).

In future SNAPSHOT USA surveys, we plan to provide SNAPSHOT USA contributors with the opportunity to



**TABLE 3** | Description of the distribution of sampling effort during SNAPSHOT USA 2019–2023, consisting of 9694 deployments across 263 arrays for a total of 371,979 camera trap-nights of survey effort.

| State | Array            | Camera locations | Camera trap-nights | Years surveyed |
|-------|------------------|------------------|--------------------|----------------|
| AK    | Afognak          | 13               | 439                | 1              |
| AK    | Crupi            | 17               | 3236               | 5              |
| AL    | Fantle-Lepczyk   | 84               | 3882               | 5              |
| AR    | DeGregorio       | 26               | 1087               | 2              |
| AR    | Fayetteville     | 10               | 400                | 1              |
| AR    | Grandview        | 24               | 1135               | 2              |
| AR    | Johans           | 13               | 759                | 1              |
| AR    | Tigue            | 15               | 880                | 1              |
| AZ    | Cienega          | 7                | 468                | 1              |
| AZ    | Harrity          | 16               | 2225               | 2              |
| AZ    | McDowell         | 18               | 847                | 2              |
| AZ    | NAU              | 9                | 579                | 1              |
| AZ    | Sonoran          | 12               | 869                | 2              |
| AZ    | SRER1            | 9                | 305                | 1              |
| AZ    | SRER2            | 10               | 488                | 1              |
| AZ    | Tucson           | 12               | 783                | 1              |
| AZ    | Vermilion Cliffs | 6                | 302                | 1              |
| CA    | Carlile          | 14               | 1028               | 2              |
| CA    | Carrizo          | 50               | 1504               | 4              |
| CA    | Daley Ranch      | 14               | 591                | 1              |
| CA    | Humboldt         | 15               | 515                | 1              |
| CA    | Osos             | 11               | 274                | 1              |
| CA    | Pepperdine       | 13               | 585                | 1              |
| CA    | Pepperwood       | 19               | 841                | 2              |
| CA    | Point Reyes      | 9                | 467                | 1              |
| CA    | Redwoods         | 16               | 1836               | 2              |
| CA    | San Joaquin      | 10               | 450                | 1              |
| CA    | Sierra Nevada    | 45               | 2385               | 4              |
| CA    | SierraNevada2    | 9                | 466                | 1              |
| CO    | Goldfarb         | 10               | 293                | 1              |
| CO    | Mesa             | 17               | 754                | 1              |
| CO    | USAFA            | 32               | 4426               | 5              |
| CT    | Nye Holman       | 72               | 3093               | 5              |
| CT    | Storrs           | 21               | 2917               | 5              |
| DC    | Herrera          | 266              | 7662               | 5              |
| DE    | UD Farm          | 8                | 237                | 1              |
| DE    | Wilmington       | 36               | 1445               | 3              |
| FL    | Alto             | 16               | 734                | 1              |

(Continues)

TABLE 3 | (Continued)

| State | Array           | Camera locations | Camera trap-nights | Years surveyed |
|-------|-----------------|------------------|--------------------|----------------|
| FL    | Apalachicola    | 12               | 497                | 1              |
| FL    | Balu            | 17               | 758                | 1              |
| FL    | CoG             | 40               | 2462               | 1              |
| FL    | Croc Lake       | 47               | 3775               | 4              |
| FL    | DeLuca          | 45               | 1900               | 3              |
| FL    | Ellington       | 58               | 5674               | 3              |
| FL    | Key Deer Refuge | 12               | 754                | 1              |
| FL    | Melrose         | 56               | 3768               | 4              |
| FL    | NFREC           | 8                | 468                | 1              |
| FL    | Ordway          | 40               | 2861               | 1              |
| GA    | Bear Creek      | 7                | 420                | 1              |
| GA    | Carrollton      | 129              | 2145               | 5              |
| GA    | Ceylon          | 6                | 294                | 1              |
| GA    | Dixon Memorial  | 19               | 513                | 1              |
| GA    | Jones Center    | 37               | 2526               | 4              |
| GA    | Lower Altmaha   | 16               | 504                | 1              |
| GA    | Patterson       | 8                | 362                | 1              |
| GA    | Weigel          | 39               | 1842               | 2              |
| HI    | Oahu            | 33               | 2175               | 5              |
| IA    | Rentz           | 39               | 4462               | 5              |
| ID    | Galena          | 8                | 340                | 1              |
| ID    | Hailey          | 9                | 427                | 1              |
| ID    | Rachlow         | 60               | 3285               | 2              |
| ID    | SunValley       | 11               | 529                | 1              |
| IL    | Aurora          | 8                | 379                | 1              |
| IL    | Deshwal         | 46               | 1962               | 2              |
| IL    | Nachusa         | 10               | 356                | 1              |
| IL    | SIUE            | 9                | 538                | 1              |
| IL    | TON             | 26               | 813                | 1              |
| IL    | Urbana          | 52               | 2280               | 5              |
| IL    | Vermillion      | 18               | 630                | 1              |
| IN    | Brooke          | 26               | 1969               | 5              |
| IN    | PWA Martell     | 16               | 2795               | 5              |
| KS    | Ahlers          | 64               | 1558               | 2              |
| KS    | Fort Hays       | 30               | 981                | 2              |
| KS    | Lawrence        | 27               | 1314               | 3              |
| KS    | Pittsburg       | 17               | 2481               | 5              |
| KY    | Darracq         | 17               | 954                | 2              |

(Continues)

TABLE 3 | (Continued)

| State | Array                        | Camera locations | Camera trap-nights | Years surveyed |
|-------|------------------------------|------------------|--------------------|----------------|
| KY    | Green River Preserve         | 20               | 1182               | 2              |
| KY    | Kentucky Natural Lands Trust | 15               | 628                | 2              |
| KY    | Marshall County              | 20               | 593                | 2              |
| KY    | Sovie                        | 9                | 471                | 1              |
| LA    | Abita Flats                  | 11               | 640                | 1              |
| LA    | CCRoad                       | 10               | 447                | 1              |
| LA    | Hammond                      | 29               | 1742               | 4              |
| LA    | LSU1                         | 18               | 1303               | 1              |
| LA    | LSU2                         | 11               | 701                | 1              |
| LA    | LSU3                         | 12               | 746                | 1              |
| LA    | LSU4                         | 10               | 682                | 1              |
| MA    | Amherst                      | 18               | 523                | 1              |
| MA    | Bak                          | 29               | 1471               | 2              |
| MA    | Bridgewater State            | 21               | 2817               | 5              |
| MA    | EDG                          | 18               | 1412               | 3              |
| MA    | Grafton                      | 42               | 2588               | 5              |
| MA    | OB                           | 12               | 606                | 1              |
| MA    | Tufts                        | 27               | 2688               | 5              |
| MA    | WT                           | 16               | 1499               | 3              |
| MD    | Baltimore                    | 16               | 339                | 1              |
| MD    | Nemes                        | 10               | 279                | 1              |
| ME    | Mortelliti                   | 6                | 390                | 1              |
| ME    | Penobscot Forest             | 27               | 1499               | 3              |
| ME    | Piscataquis County           | 7                | 408                | 1              |
| MI    | Corey Marsh                  | 14               | 810                | 1              |
| MI    | Detroit                      | 27               | 263                | 1              |
| MI    | Kellogg                      | 11               | 451                | 1              |
| MI    | Shiawassee                   | 10               | 565                | 1              |
| MI    | Tawas                        | 16               | 717                | 1              |
| MI    | Upper Peninsula              | 58               | 7130               | 5              |
| MI    | Upper Peninsula 2            | 11               | 3144               | 5              |
| MI    | Upper Peninsula 3            | 39               | 481                | 1              |
| MI    | WaWaSum                      | 16               | 671                | 1              |
| MN    | Chatterjee                   | 16               | 607                | 1              |
| MN    | Itasca County                | 16               | 527                | 1              |
| MO    | Bull Shoals                  | 38               | 2872               | 5              |
| MO    | HBHMAcres                    | 28               | 1039               | 2              |
| MO    | MOHansen                     | 36               | 1161               | 2              |

(Continues)

TABLE 3 | (Continued)

| State | Array                  | Camera locations | Camera trap-nights | Years surveyed |
|-------|------------------------|------------------|--------------------|----------------|
| MO    | MWSU                   | 8                | 1056               | 2              |
| MO    | University of Missouri | 15               | 1648               | 2              |
| MS    | Dahomey                | 11               | 506                | 1              |
| MS    | Starkville             | 23               | 1541               | 2              |
| MT    | AutumnPN               | 10               | 85                 | 1              |
| MT    | Bandy Ranch            | 21               | 915                | 1              |
| MT    | Blackfoot              | 15               | 990                | 1              |
| MT    | Fort Belknap           | 13               | 163                | 1              |
| MT    | Hebblewhite            | 31               | 2534               | 1              |
| MT    | MT Hansen              | 67               | 8938               | 5              |
| MT    | MT Urban Wild          | 14               | 858                | 1              |
| MT    | River Trail            | 23               | 1741               | 4              |
| MT    | Shamon                 | 214              | 5879               | 5              |
| MT    | Stewart                | 8                | 288                | 1              |
| MT    | White Rock             | 36               | 416                | 1              |
| NC    | Alamance               | 31               | 647                | 1              |
| NC    | ARNWR                  | 37               | 1760               | 3              |
| NC    | Burke                  | 26               | 509                | 1              |
| NC    | Cleveland              | 10               | 210                | 1              |
| NC    | Craven                 | 14               | 297                | 1              |
| NC    | Dare                   | 22               | 550                | 1              |
| NC    | Farris                 | 35               | 1585               | 3              |
| NC    | GMSF                   | 10               | 648                | 1              |
| NC    | Haywood                | 11               | 204                | 1              |
| NC    | Hill                   | 66               | 3545               | 4              |
| NC    | Iredell                | 52               | 1625               | 3              |
| NC    | M&M Ranch              | 13               | 578                | 1              |
| NC    | Moore                  | 33               | 611                | 1              |
| NC    | MtGlum                 | 22               | 2234               | 4              |
| NC    | Pender                 | 22               | 448                | 1              |
| NC    | Roan                   | 12               | 663                | 1              |
| NC    | Schenck                | 69               | 3221               | 5              |
| NC    | Surry                  | 23               | 487                | 1              |
| NC    | Umstead                | 120              | 6458               | 4              |
| NC    | WCU                    | 15               | 572                | 1              |
| NC    | Yarnall Knob           | 10               | 448                | 1              |
| ND    | Coteau Ranch           | 21               | 719                | 2              |
| ND    | Oakville Prairie       | 24               | 831                | 5              |

(Continues)

TABLE 3 | (Continued)

| State | Array                  | Camera locations | Camera trap-nights | Years surveyed |
|-------|------------------------|------------------|--------------------|----------------|
| NE    | University of Nebraska | 35               | 998                | 3              |
| NH    | Bartlett               | 34               | 5264               | 3              |
| NH    | Lancaster              | 8                | 506                | 1              |
| NH    | QPF                    | 8                | 381                | 1              |
| NJ    | Lathrop                | 13               | 712                | 1              |
| NJ    | Rutgers                | 28               | 2006               | 4              |
| NM    | ENMU                   | 9                | 415                | 1              |
| NM    | White Sands            | 13               | 187                | 1              |
| NV    | Galena Creek           | 10               | 378                | 1              |
| NV    | Mojave                 | 39               | 1874               | 4              |
| NV    | Truckee Meadows        | 11               | 356                | 1              |
| NV    | University of Nevada   | 12               | 425                | 1              |
| NY    | Black Rock             | 23               | 1938               | 3              |
| NY    | Bogan                  | 31               | 2318               | 5              |
| NY    | Cary Institute         | 16               | 496                | 1              |
| NY    | Cranberry Lake         | 26               | 1483               | 2              |
| NY    | Heiberg                | 8                | 252                | 1              |
| NY    | Jones Beach            | 11               | 783                | 1              |
| NY    | Mianus                 | 100              | 4799               | 5              |
| NY    | Newburgh               | 10               | 508                | 1              |
| NY    | NYC                    | 65               | 4497               | 4              |
| NY    | Paul Smiths            | 22               | 824                | 3              |
| NY    | Scenic Hudson          | 23               | 1835               | 3              |
| NY    | Skaneateles            | 8                | 233                | 1              |
| NY    | St Lawrence            | 32               | 1891               | 3              |
| NY    | Syracuse               | 9                | 224                | 1              |
| NY    | Wild Bogan             | 23               | 2352               | 5              |
| OH    | Athens                 | 11               | 425                | 1              |
| OH    | G3Ranch                | 23               | 1056               | 2              |
| OH    | Huston Brumbaugh       | 15               | 2971               | 5              |
| OK    | Ardmore                | 25               | 2260               | 5              |
| OK    | Burneyville            | 17               | 2067               | 5              |
| OK    | Falconhead             | 17               | 1112               | 2              |
| OK    | James Collins          | 57               | 1659               | 3              |
| OK    | Lonsinger              | 18               | 1446               | 3              |
| OK    | Selman                 | 7                | 261                | 1              |
| OR    | Cow Creek              | 13               | 280                | 1              |
| OR    | Forrester              | 43               | 2208               | 2              |

(Continues)

TABLE 3 | (Continued)

| State | Array                   | Camera locations | Camera trap-nights | Years surveyed |
|-------|-------------------------|------------------|--------------------|----------------|
| OR    | McMinnville             | 8                | 369                | 1              |
| OR    | Oregon State University | 26               | 3307               | 5              |
| PA    | Crum Woods              | 7                | 372                | 1              |
| PA    | Gettysburg              | 24               | 1797               | 4              |
| PA    | Rothrock                | 51               | 3000               | 4              |
| PA    | State Game Lands        | 19               | 337                | 1              |
| RI    | Arcadia WMA             | 15               | 849                | 1              |
| RI    | URI                     | 32               | 3213               | 5              |
| SC    | Bottomland              | 39               | 842                | 2              |
| SC    | Clemson North           | 21               | 1701               | 1              |
| SC    | Lynches                 | 16               | 453                | 1              |
| SC    | Piedmont                | 8                | 782                | 2              |
| SC    | SoEights                | 18               | 2757               | 3              |
| SC    | SREL                    | 34               | 904                | 2              |
| SD    | Brookings               | 26               | 2472               | 5              |
| SD    | Custer                  | 11               | 954                | 2              |
| SD    | Oak Lake FS             | 16               | 1206               | 3              |
| TN    | Austin Peay             | 9                | 448                | 1              |
| TN    | Cheatham                | 35               | 1359               | 3              |
| TN    | Cumberland              | 24               | 1281               | 4              |
| TN    | Doe                     | 36               | 1084               | 2              |
| TN    | Jorge                   | 23               | 1324               | 2              |
| TN    | Soak Creek              | 11               | 609                | 1              |
| TX    | AandM                   | 14               | 867                | 1              |
| TX    | Abilene                 | 42               | 3215               | 5              |
| TX    | Angelina                | 56               | 1730               | 5              |
| TX    | Aransas NWR             | 10               | 778                | 1              |
| TX    | Caesar Kleberg          | 20               | 1074               | 2              |
| TX    | Freeman                 | 23               | 2354               | 5              |
| TX    | Gene Howe               | 42               | 1354               | 4              |
| TX    | Kingsville              | 23               | 839                | 2              |
| TX    | La Copita               | 27               | 1131               | 1              |
| TX    | LBJ                     | 18               | 401                | 1              |
| TX    | Matador                 | 50               | 2347               | 5              |
| TX    | Military Department     | 15               | 788                | 1              |
| TX    | San Marcos              | 32               | 1646               | 2              |
| TX    | Tarleton                | 7                | 476                | 1              |
| TX    | UHD                     | 9                | 475                | 1              |

(Continues)

TABLE 3 | (Continued)

| State | Array                         | Camera locations | Camera trap-nights | Years surveyed |
|-------|-------------------------------|------------------|--------------------|----------------|
| TX    | USACE                         | 12               | 384                | 1              |
| TX    | Yoakum Dunes                  | 15               | 1103               | 3              |
| UT    | Cottonwood Canyon             | 21               | 2667               | 3              |
| UT    | Red Cliffs                    | 14               | 840                | 1              |
| UT    | SLC                           | 72               | 3716               | 5              |
| UT    | Swaner Preserve               | 10               | 390                | 1              |
| UT    | Wasatch                       | 45               | 2549               | 4              |
| VA    | Anthro Richmond               | 8                | 476                | 1              |
| VA    | Art                           | 28               | 1476               | 2              |
| VA    | Cedars NAP                    | 11               | 782                | 2              |
| VA    | Fort AP                       | 13               | 421                | 1              |
| VA    | Pagebrook                     | 31               | 2043               | 4              |
| VA    | RMC                           | 32               | 1218               | 3              |
| VA    | SCBI                          | 72               | 3004               | 5              |
| VA    | Shenandoah                    | 34               | 888                | 2              |
| VA    | Suburban Richmond             | 7                | 642                | 2              |
| VA    | Tamara                        | 12               | 321                | 1              |
| VT    | Breadloaf                     | 24               | 1693               | 2              |
| VT    | Brunswick                     | 8                | 500                | 1              |
| VT    | Lake Raponda                  | 15               | 717                | 1              |
| VT    | Watershed                     | 59               | 2976               | 3              |
| WA    | Elwha                         | 26               | 1585               | 2              |
| WA    | Johnson                       | 16               | 1652               | 2              |
| WA    | Kamiak Butte                  | 11               | 244                | 1              |
| WA    | Olympic Peninsula             | 35               | 2828               | 3              |
| WA    | Smoot Hill                    | 13               | 322                | 1              |
| WA    | SUCP                          | 24               | 2060               | 4              |
| WA    | Vashon                        | 14               | 756                | 1              |
| WI    | Stenglein                     | 20               | 2391               | 5              |
| WI    | Whitewater                    | 32               | 1726               | 5              |
| WV    | University<br>Research Forest | 90               | 3245               | 5              |
| WY    | Alexander                     | 30               | 2296               | 4              |
| WY    | Baggs                         | 17               | 2886               | 5              |
| WY    | UoW                           | 10               | 434                | 1              |
| WY    | Wuensch                       | 20               | 735                | 1              |
|       | Total                         | 6754             | 371,979            |                |

Note: Camera trap-nights were calculated by using the timestamps of the first and last images in each deployment. The arrays are sorted alphabetically, first by state abbreviation and then by array name.

**TABLE 4** | Species detected in all years of SNAPSHOT USA 2019–2023, organised by species groups (amphibian, arthropod, bird, domestic/feral mammal, gastropod, human, reptile, wild mammal, unknown animal) and sorted by their total number of detections.

| Group     | Common name                 | Species name                    | Detections | Locations | Arrays |
|-----------|-----------------------------|---------------------------------|------------|-----------|--------|
| Amphibian | American toad               | <i>Anaxyrus americanus</i>      | 5          | 1         | 1      |
| Amphibian | Unknown frog                | Unknown frog                    | 4          | 3         | 3      |
| Amphibian | Unknown amphibian           | Unknown amphibian               | 1          | 1         | 1      |
| Arthropod | Unknown insect              | Unknown insect                  | 738        | 144       | 51     |
| Arthropod | Butterflies and moths       | Butterflies and moths           | 111        | 58        | 26     |
| Arthropod | Unknown spider              | Unknown spider                  | 20         | 11        | 9      |
| Arthropod | Dragonflies and damselflies | Dragonflies and damselflies     | 4          | 3         | 3      |
| Bird      | Unknown bird                | Unknown bird                    | 14,511     | 1899      | 217    |
| Bird      | Wild turkey                 | <i>Meleagris gallopavo</i>      | 9616       | 1170      | 156    |
| Bird      | American robin              | <i>Turdus migratorius</i>       | 4357       | 499       | 111    |
| Bird      | Gambel's quail              | <i>Callipepla gambelii</i>      | 1470       | 51        | 11     |
| Bird      | Mourning dove               | <i>Zenaida macroura</i>         | 893        | 132       | 48     |
| Bird      | Blue jay                    | <i>Cyanocitta cristata</i>      | 860        | 324       | 88     |
| Bird      | Common raven                | <i>Corvus corax</i>             | 772        | 79        | 19     |
| Bird      | Greater roadrunner          | <i>Geococcyx californianus</i>  | 573        | 122       | 26     |
| Bird      | Great blue heron            | <i>Ardea herodias</i>           | 557        | 85        | 46     |
| Bird      | Black-billed magpie         | <i>Pica hudsonia</i>            | 541        | 91        | 20     |
| Bird      | American crow               | <i>Corvus brachyrhynchos</i>    | 529        | 120       | 49     |
| Bird      | Northern flicker            | <i>Colaptes auratus</i>         | 487        | 215       | 86     |
| Bird      | Northern cardinal           | <i>Cardinalis cardinalis</i>    | 480        | 137       | 53     |
| Bird      | Corvidae family             | Corvidae family                 | 440        | 79        | 36     |
| Bird      | California quail            | <i>Callipepla californica</i>   | 408        | 46        | 11     |
| Bird      | Bald eagle                  | <i>Haliaeetus leucocephalus</i> | 334        | 11        | 6      |
| Bird      | <i>Corvus</i> species       | <i>Corvus</i> species           | 327        | 57        | 28     |
| Bird      | Strigiformes order          | Strigiformes order              | 306        | 136       | 76     |
| Bird      | Ruffed grouse               | <i>Bonasa umbellus</i>          | 294        | 113       | 34     |
| Bird      | Canada goose                | <i>Branta canadensis</i>        | 287        | 17        | 8      |
| Bird      | Turdidae family             | Turdidae family                 | 272        | 124       | 53     |
| Bird      | Passeriformes order         | Passeriformes order             | 259        | 108       | 52     |
| Bird      | Varied thrush               | <i>Ixoreus naevius</i>          | 258        | 39        | 9      |
| Bird      | Turkey vulture              | <i>Cathartes aura</i>           | 247        | 54        | 30     |
| Bird      | Ovenbird                    | <i>Seiurus aurocapilla</i>      | 180        | 25        | 14     |
| Bird      | Common grackle              | <i>Quiscalus quiscula</i>       | 176        | 73        | 26     |
| Bird      | Dark-eyed junco             | <i>Junco hyemalis</i>           | 172        | 39        | 25     |
| Bird      | Mexican jay                 | <i>Aphelocoma wollweberi</i>    | 168        | 11        | 2      |
| Bird      | Hermit thrush               | <i>Catharus guttatus</i>        | 155        | 33        | 14     |

(Continues)



TABLE 4 | (Continued)

| Group | Common name            | Species name                    | Detections | Locations | Arrays |
|-------|------------------------|---------------------------------|------------|-----------|--------|
| Bird  | Passeridae family      | Passeridae family               | 151        | 62        | 39     |
| Bird  | White-crowned sparrow  | <i>Zonotrichia leucophrys</i>   | 151        | 22        | 13     |
| Bird  | Ring-necked pheasant   | <i>Phasianus colchicus</i>      | 148        | 32        | 8      |
| Bird  | Northern mockingbird   | <i>Mimus polyglottos</i>        | 143        | 56        | 19     |
| Bird  | Accipitriformes order  | Accipitriformes order           | 130        | 85        | 56     |
| Bird  | Steller's jay          | <i>Cyanocitta stelleri</i>      | 127        | 49        | 15     |
| Bird  | Mallard                | <i>Anas platyrhynchos</i>       | 115        | 11        | 10     |
| Bird  | Anatidae family        | Anatidae family                 | 113        | 13        | 12     |
| Bird  | Barred owl             | <i>Strix varia</i>              | 113        | 66        | 35     |
| Bird  | Northern bobwhite      | <i>Colinus virginianus</i>      | 113        | 44        | 15     |
| Bird  | Long-billed thrasher   | <i>Toxostoma longirostre</i>    | 110        | 10        | 4      |
| Bird  | Common starling        | <i>Sturnus vulgaris</i>         | 101        | 31        | 15     |
| Bird  | White ibis             | <i>Eudocimus albus</i>          | 101        | 17        | 6      |
| Bird  | Western meadowlark     | <i>Sturnella neglecta</i>       | 97         | 35        | 13     |
| Bird  | White-tipped dove      | <i>Leptotila verreauxi</i>      | 96         | 8         | 2      |
| Bird  | Red-tailed hawk        | <i>Buteo jamaicensis</i>        | 92         | 68        | 41     |
| Bird  | Chihuahuan raven       | <i>Corvus cryptoleucus</i>      | 88         | 4         | 2      |
| Bird  | Columbidae family      | Columbidae family               | 87         | 45        | 24     |
| Bird  | Spotted towhee         | <i>Pipilo maculatus</i>         | 86         | 26        | 14     |
| Bird  | Common ground dove     | <i>Columbina passerina</i>      | 80         | 16        | 5      |
| Bird  | American kestrel       | <i>Falco sparverius</i>         | 79         | 33        | 16     |
| Bird  | Wood thrush            | <i>Hylocichla mustelina</i>     | 79         | 24        | 13     |
| Bird  | Plain chachalaca       | <i>Ortalis vetula</i>           | 77         | 11        | 1      |
| Bird  | Northern harrier       | <i>Circus hudsonius</i>         | 76         | 39        | 10     |
| Bird  | Brown thrasher         | <i>Toxostoma rufum</i>          | 73         | 32        | 15     |
| Bird  | California scrub-jay   | <i>Aphelocoma californica</i>   | 72         | 25        | 9      |
| Bird  | Accipitridae family    | Accipitridae family             | 71         | 59        | 45     |
| Bird  | Pileated woodpecker    | <i>Hylatomus pileatus</i>       | 65         | 50        | 35     |
| Bird  | Red-shouldered hawk    | <i>Buteo lineatus</i>           | 64         | 42        | 21     |
| Bird  | Eastern spotted dove   | <i>Spilopelia chinensis</i>     | 62         | 13        | 2      |
| Bird  | Grey catbird           | <i>Dumetella carolinensis</i>   | 61         | 25        | 18     |
| Bird  | Sharp-tailed grouse    | <i>Tympanuchus phasianellus</i> | 58         | 28        | 5      |
| Bird  | White-throated sparrow | <i>Zonotrichia albicollis</i>   | 56         | 20        | 13     |
| Bird  | Common pheasant        | <i>Phasianus colchicus</i>      | 53         | 15        | 5      |
| Bird  | Tufted titmouse        | <i>Baeolophus bicolor</i>       | 52         | 34        | 25     |
| Bird  | Brown-headed cowbird   | <i>Molothrus ater</i>           | 48         | 6         | 5      |
| Bird  | White-winged dove      | <i>Zenaida asiatica</i>         | 45         | 7         | 5      |
| Bird  | Wood duck              | <i>Aix sponsa</i>               | 45         | 9         | 8      |

(Continues)

TABLE 4 | (Continued)

| Group | Common name               | Species name                   | Detections | Locations | Arrays |
|-------|---------------------------|--------------------------------|------------|-----------|--------|
| Bird  | Red-bellied woodpecker    | <i>Melanerpes carolinus</i>    | 43         | 26        | 19     |
| Bird  | Rusty blackbird           | <i>Euphagus carolinus</i>      | 43         | 4         | 3      |
| Bird  | American black vulture    | <i>Coragyps atratus</i>        | 42         | 14        | 11     |
| Bird  | Great horned owl          | <i>Bubo virginianus</i>        | 42         | 21        | 15     |
| Bird  | Palm warbler              | <i>Setophaga palmarum</i>      | 41         | 10        | 5      |
| Bird  | Sandhill crane            | <i>Antigone canadensis</i>     | 41         | 16        | 5      |
| Bird  | Blue grouse               | <i>Dendragapus obscurus</i>    | 39         | 11        | 4      |
| Bird  | Muscovy duck              | <i>Cairina moschata</i>        | 38         | 1         | 1      |
| Bird  | Downy woodpecker          | <i>Dryobates pubescens</i>     | 36         | 29        | 19     |
| Bird  | Great egret               | <i>Ardea albus</i>             | 36         | 12        | 8      |
| Bird  | Burrowing owl             | <i>Athene cunicularia</i>      | 35         | 11        | 7      |
| Bird  | Song sparrow              | <i>Melospiza melodia</i>       | 35         | 11        | 9      |
| Bird  | Caprimulgiformes order    | Caprimulgiformes order         | 34         | 1         | 1      |
| Bird  | Troglodytidae family      | Troglodytidae family           | 34         | 11        | 7      |
| Bird  | Cooper's hawk             | <i>Accipiter cooperii</i>      | 31         | 24        | 19     |
| Bird  | Passerellidae family      | Passerellidae family           | 31         | 10        | 6      |
| Bird  | Strigidae family          | Strigidae family               | 31         | 28        | 26     |
| Bird  | Curve-billed thrasher     | <i>Toxostoma curvirostre</i>   | 30         | 6         | 3      |
| Bird  | Olive sparrow             | <i>Arremonops rufivirgatus</i> | 30         | 2         | 1      |
| Bird  | Tyrannidae family         | Tyrannidae family              | 30         | 17        | 14     |
| Bird  | Common barn owl           | <i>Tyto alba</i>               | 29         | 8         | 6      |
| Bird  | Hairy woodpecker          | <i>Leuconotopicus villosus</i> | 28         | 17        | 13     |
| Bird  | Loggerhead shrike         | <i>Lanius ludovicianus</i>     | 28         | 21        | 9      |
| Bird  | <i>Sturnella</i> species  | <i>Sturnella</i> species       | 28         | 9         | 3      |
| Bird  | Eastern bluebird          | <i>Sialia sialis</i>           | 26         | 17        | 12     |
| Bird  | Green jay                 | <i>Cyanocorax yncas</i>        | 26         | 12        | 3      |
| Bird  | Horned lark               | <i>Eremophila alpestris</i>    | 26         | 13        | 4      |
| Bird  | Phasianidae family        | Phasianidae family             | 26         | 16        | 12     |
| Bird  | Red-winged blackbird      | <i>Agelaius phoeniceus</i>     | 26         | 8         | 7      |
| Bird  | Swainson's thrush         | <i>Catharus swainsoni</i>      | 26         | 13        | 7      |
| Bird  | Clark's nutcracker        | <i>Nucifraga columbiana</i>    | 25         | 3         | 2      |
| Bird  | Golden-fronted woodpecker | <i>Melanerpes aurifrons</i>    | 25         | 8         | 2      |
| Bird  | Spruce grouse             | <i>Canachites canadensis</i>   | 25         | 11        | 6      |
| Bird  | Icteridae family          | Icteridae family               | 24         | 19        | 14     |
| Bird  | Picidae family            | Picidae family                 | 23         | 21        | 17     |
| Bird  | Mountain quail            | <i>Oreortyx pictus</i>         | 22         | 12        | 3      |
| Bird  | Rock wren                 | <i>Salpinctes obsoletus</i>    | 22         | 1         | 1      |

(Continues)

TABLE 4 | (Continued)

| Group | Common name                | Species name                           | Detections | Locations | Arrays |
|-------|----------------------------|--|------------|-----------|--------|
| Bird  | Limpkin                    | <i>Aramus guarauna</i>                 | 21         | 3         | 2      |
| Bird  | Short-eared owl            | <i>Asio flammeus</i>                   | 21         | 4         | 2      |
| Bird  | Carolina wren              | <i>Thryothorus ludovicianus</i>        | 20         | 12        | 8      |
| Bird  | Eastern phoebe             | <i>Sayornis phoebe</i>                 | 20         | 8         | 7      |
| Bird  | Galliformes order          | Galliformes order                      | 20         | 12        | 10     |
| Bird  | Myrtle warbler             | <i>Setophaga coronata</i>              | 20         | 8         | 7      |
| Bird  | <i>Turdus</i> species      | <i>Turdus</i> species                  | 20         | 2         | 2      |
| Bird  | Eastern screech-owl        | <i>Megascops asio</i>                  | 19         | 12        | 10     |
| Bird  | Trochilidae family         | Trochilidae family                     | 19         | 16        | 12     |
| Bird  | Ardeidae family            | Ardeidae family                        | 18         | 9         | 8      |
| Bird  | Rufous-sided towhee        | <i>Pipilo erythrophthalmus</i>         | 18         | 13        | 9      |
| Bird  | Tricolored heron           | <i>Egretta tricolor</i>                | 18         | 4         | 3      |
| Bird  | Wren                       | <i>Troglodytes troglodytes</i>         | 17         | 3         | 1      |
| Bird  | <i>Zonotrichia</i> species | <i>Zonotrichia</i> species             | 17         | 3         | 1      |
| Bird  | Black phoebe               | <i>Sayornis nigricans</i>              | 16         | 5         | 2      |
| Bird  | Black-capped chickadee     | <i>Poecile atricapillus</i>            | 16         | 15        | 10     |
| Bird  | <i>Buteo</i> species       | <i>Buteo</i> species                   | 16         | 14        | 10     |
| Bird  | Chipping sparrow           | <i>Spizella passerina</i>              | 15         | 2         | 1      |
| Bird  | Pauraque                   | <i>Nyctidromus albicollis</i>          | 15         | 3         | 2      |
| Bird  | Golden eagle               | <i>Aquila chrysaetos</i>               | 14         | 4         | 3      |
| Bird  | Pacific wren               | <i>Troglodytes pacificus</i>           | 14         | 2         | 2      |
| Bird  | Common magpie              | <i>Pica pica</i>                       | 13         | 4         | 2      |
| Bird  | Montezuma quail            | <i>Cyrtonyx montezumae</i>             | 13         | 3         | 1      |
| Bird  | Parulidae family           | Parulidae family                       | 13         | 10        | 9      |
| Bird  | Red fox-sparrow            | <i>Passerella iliaca</i>               | 13         | 1         | 1      |
| Bird  | Cactus wren                | <i>Campylorhynchus brunneicapillus</i> | 12         | 5         | 3      |
| Bird  | <i>Colaptes</i> species    | <i>Colaptes</i> species                | 12         | 4         | 3      |
| Bird  | Vesper sparrow             | <i>Pooecetes gramineus</i>             | 12         | 7         | 1      |
| Bird  | White-breasted nuthatch    | <i>Sitta carolinensis</i>              | 12         | 11        | 11     |
| Bird  | Collared dove              | <i>Streptopelia decaocto</i>           | 11         | 3         | 3      |
| Bird  | Great-tailed grackle       | <i>Quiscalus mexicanus</i>             | 11         | 5         | 2      |
| Bird  | Mountain bluebird          | <i>Sialia currucoides</i>              | 11         | 5         | 3      |
| Bird  | Pinyon jay                 | <i>Gymnorhinus cyanocephalus</i>       | 11         | 5         | 2      |
| Bird  | Say's phoebe               | <i>Sayornis saya</i>                   | 11         | 6         | 3      |
| Bird  | American woodcock          | <i>Scolopax minor</i>                  | 10         | 5         | 5      |
| Bird  | House wren                 | <i>Troglodytes aedon</i>               | 10         | 8         | 8      |
| Bird  | Lark sparrow               | <i>Chondestes grammacus</i>            | 10         | 8         | 2      |

(Continues)

TABLE 4 | (Continued)

| Group | Common name               | Species name                     | Detections | Locations | Arrays |
|-------|---------------------------|----------------------------------|------------|-----------|--------|
| Bird  | Sage thrasher             | <i>Oreoscoptes montanus</i>      | 10         | 4         | 1      |
| Bird  | Savannah sparrow          | <i>Passerculus sandwichensis</i> | 10         | 3         | 3      |
| Bird  | <i>Accipiter</i> species  | <i>Accipiter</i> species         | 9          | 9         | 6      |
| Bird  | American white pelican    | <i>Pelecanus erythrorhynchos</i> | 9          | 2         | 1      |
| Bird  | Brewer's blackbird        | <i>Euphagus cyanocephalus</i>    | 9          | 7         | 7      |
| Bird  | Yellow-breasted chat      | <i>Icteria virens</i>            | 9          | 4         | 2      |
| Bird  | American bittern          | <i>Botaurus lentiginosus</i>     | 8          | 6         | 3      |
| Bird  | Anseriformes order        | Anseriformes order               | 8          | 2         | 2      |
| Bird  | Scissor-tailed flycatcher | <i>Tyrannus forficatus</i>       | 8          | 6         | 3      |
| Bird  | <i>Catharus</i> species   | <i>Catharus</i> species          | 7          | 5         | 4      |
| Bird  | Cattle egret              | <i>Bubulcus ibis</i>             | 7          | 4         | 3      |
| Bird  | Grey jay                  | <i>Perisoreus canadensis</i>     | 7          | 4         | 1      |
| Bird  | <i>Larus</i> species      | <i>Larus</i> species             | 7          | 5         | 3      |
| Bird  | Northwestern crow         | <i>Corvus caurinus</i>           | 7          | 1         | 1      |
| Bird  | Red-shafted flicker       | <i>Colaptes cafer</i>            | 7          | 5         | 3      |
| Bird  | Scaled quail              | <i>Callipepla squamata</i>       | 7          | 4         | 2      |
| Bird  | Swainson's hawk           | <i>Buteo swainsoni</i>           | 7          | 4         | 3      |
| Bird  | Western bluebird          | <i>Sialia mexicana</i>           | 7          | 5         | 3      |
| Bird  | White-tailed hawk         | <i>Geranoaetus albicaudatus</i>  | 7          | 1         | 1      |
| Bird  | Black-and-white warbler   | <i>Mniotilta varia</i>           | 6          | 4         | 4      |
| Bird  | <i>Callipepla</i> species | <i>Callipepla</i> species        | 6          | 3         | 2      |
| Bird  | Cardinalidae family       | Cardinalidae family              | 6          | 5         | 5      |
| Bird  | Carolina chickadee        | <i>Poecile carolinensis</i>      | 6          | 5         | 5      |
| Bird  | Ferruginous hawk          | <i>Buteo regalis</i>             | 6          | 1         | 1      |
| Bird  | Goosander                 | <i>Mergus merganser</i>          | 6          | 1         | 1      |
| Bird  | Green heron               | <i>Butorides virescens</i>       | 6          | 4         | 4      |
| Bird  | House finch               | <i>Haemorhous mexicanus</i>      | 6          | 4         | 3      |
| Bird  | Little blue heron         | <i>Egretta caerulea</i>          | 6          | 3         | 3      |
| Bird  | <i>Melospiza</i> species  | <i>Melospiza</i> species         | 6          | 1         | 1      |
| Bird  | Woodhouse's scrub-jay     | <i>Aphelocoma woodhouseii</i>    | 6          | 3         | 3      |
| Bird  | <i>Zenaidura</i> species  | <i>Zenaidura</i> species         | 6          | 5         | 1      |
| Bird  | American tree sparrow     | <i>Passerella arborea</i>        | 5          | 2         | 2      |
| Bird  | Columbiformes order       | Columbiformes order              | 5          | 3         | 3      |
| Bird  | Domestic chicken          | <i>Gallus gallus</i>             | 5          | 3         | 2      |
| Bird  | Dusky grouse              | <i>Dendragapus obscurus</i>      | 5          | 4         | 2      |
| Bird  | Emberizidae family        | Emberizidae family               | 5          | 1         | 1      |
| Bird  | House sparrow             | <i>Passer domesticus</i>         | 5          | 5         | 2      |
| Bird  | Mimidae family            | Mimidae family                   | 5          | 5         | 4      |

(Continues)

TABLE 4 | (Continued)

| Group | Common name                | Species name                   | Detections | Locations | Arrays |
|-------|----------------------------|--------------------------------|------------|-----------|--------|
| Bird  | Western spotted dove       | <i>Spilopelia suratensis</i>   | 5          | 3         | 1      |
| Bird  | Yellow-crowned night-heron | <i>Nyctanassa violacea</i>     | 5          | 4         | 4      |
| Bird  | Black-crowned night-heron  | <i>Nycticorax nycticorax</i>   | 4          | 1         | 1      |
| Bird  | Crested caracara           | <i>Caracara cheriway</i>       | 4          | 3         | 1      |
| Bird  | Eastern meadowlark         | <i>Sturnella magna</i>         | 4          | 4         | 2      |
| Bird  | Great white egret          | <i>Ardea alba</i>              | 4          | 2         | 2      |
| Bird  | Killdeer                   | <i>Charadrius vociferus</i>    | 4          | 3         | 3      |
| Bird  | <i>Meleagris</i> species   | <i>Meleagris</i> species       | 4          | 4         | 3      |
| Bird  | <i>Sialia</i> species      | <i>Sialia</i> species          | 4          | 4         | 2      |
| Bird  | Wilson's snipe             | <i>Gallinago delicata</i>      | 4          | 3         | 3      |
| Bird  | Yellow-bellied sapsucker   | <i>Sphyrapicus varius</i>      | 4          | 4         | 4      |
| Bird  | Bewick's wren              | <i>Thryomanes bewickii</i>     | 3          | 2         | 2      |
| Bird  | Blue-winged teal           | <i>Spatula discors</i>         | 3          | 2         | 2      |
| Bird  | Caprimulgidae family       | Caprimulgidae family           | 3          | 3         | 3      |
| Bird  | <i>Columba</i> species     | <i>Columba</i> species         | 3          | 3         | 2      |
| Bird  | Greater prairie-chicken    | <i>Tympanuchus cupido</i>      | 3          | 1         | 1      |
| Bird  | Orange-crowned warbler     | <i>Leiothlypis celata</i>      | 3          | 2         | 2      |
| Bird  | Pine warbler               | <i>Setophaga pinus</i>         | 3          | 3         | 3      |
| Bird  | Saw-whet owl               | <i>Aegolius acadicus</i>       | 3          | 2         | 1      |
| Bird  | <i>Sayornis</i> species    | <i>Sayornis</i> species        | 3          | 2         | 1      |
| Bird  | Sharp-shinned hawk         | <i>Accipiter striatus</i>      | 3          | 2         | 2      |
| Bird  | Sooty grouse               | <i>Dendragapus fuliginosus</i> | 3          | 2         | 1      |
| Bird  | Trumpeter swan             | <i>Cygnus buccinator</i>       | 3          | 2         | 2      |
| Bird  | American coot              | <i>Fulica americana</i>        | 2          | 2         | 1      |
| Bird  | American redstart          | <i>Setophaga ruticilla</i>     | 2          | 2         | 2      |
| Bird  | <i>Antrostomus</i> species | <i>Antrostomus</i> species     | 2          | 1         | 1      |
| Bird  | Barn swallow               | <i>Hirundo rustica</i>         | 2          | 2         | 2      |
| Bird  | Broad-winged hawk          | <i>Buteo platypterus</i>       | 2          | 2         | 2      |
| Bird  | California thrasher        | <i>Toxostoma redivivum</i>     | 2          | 1         | 1      |
| Bird  | Cassin's sparrow           | <i>Peucaea cassinii</i>        | 2          | 2         | 1      |
| Bird  | <i>Cathartes</i> species   | <i>Cathartes</i> species       | 2          | 2         | 2      |
| Bird  | Clay-coloured sparrow      | <i>Spizella pallida</i>        | 2          | 2         | 2      |
| Bird  | <i>Dendroica</i> species   | <i>Dendroica</i> species       | 2          | 1         | 1      |
| Bird  | Eastern wood-pewee         | <i>Contopus virens</i>         | 2          | 2         | 2      |
| Bird  | <i>Euphagus</i> species    | <i>Euphagus</i> species        | 2          | 1         | 1      |
| Bird  | Falconidae family          | Falconidae family              | 2          | 1         | 1      |

(Continues)

TABLE 4 | (Continued)

| Group | Common name                   | Species name                      | Detections | Locations | Arrays |
|-------|-------------------------------|-----------------------------------|------------|-----------|--------|
| Bird  | Gila woodpecker               | <i>Melanerpes uropygialis</i>     | 2          | 2         | 2      |
| Bird  | Golden-crowned kinglet        | <i>Regulus satrapa</i>            | 2          | 1         | 1      |
| Bird  | Greater sage-grouse           | <i>Centrocercus urophasianus</i>  | 2          | 1         | 1      |
| Bird  | Green-winged teal             | <i>Anas carolinensis</i>          | 2          | 1         | 1      |
| Bird  | Harris's hawk                 | <i>Parabuteo unicinctus</i>       | 2          | 2         | 1      |
| Bird  | Hooded warbler                | <i>Setophaga citrina</i>          | 2          | 1         | 1      |
| Bird  | Lark bunting                  | <i>Calamospiza melanocorys</i>    | 2          | 1         | 1      |
| Bird  | Lesser prairie-chicken        | <i>Tympanuchus pallidicinctus</i> | 2          | 1         | 1      |
| Bird  | <i>Leuconotopicus</i> species | <i>Leuconotopicus</i> species     | 2          | 2         | 2      |
| Bird  | <i>Picoides</i> species       | <i>Picoides</i> species           | 2          | 2         | 2      |
| Bird  | Quail species                 | Quail species                     | 2          | 1         | 1      |
| Bird  | Red-breasted sapsucker        | <i>Sphyrapicus ruber</i>          | 2          | 1         | 1      |
| Bird  | Ruby-throated hummingbird     | <i>Archilochus colubris</i>       | 2          | 1         | 1      |
| Bird  | <i>Selasphorus</i> species    | <i>Selasphorus</i> species        | 2          | 2         | 1      |
| Bird  | Townsend's solitaire          | <i>Myadestes townsendi</i>        | 2          | 2         | 1      |
| Bird  | Western kingbird              | <i>Tyrannus verticalis</i>        | 2          | 2         | 2      |
| Bird  | Western screech-owl           | <i>Megascops kennicottii</i>      | 2          | 1         | 1      |
| Bird  | Wilson's warbler              | <i>Cardellina pusilla</i>         | 2          | 2         | 2      |
| Bird  | Zebra dove                    | <i>Geopelia striata</i>           | 2          | 1         | 1      |
| Bird  | Abert's towhee                | <i>Melospiza aberti</i>           | 1          | 1         | 1      |
| Bird  | Acorn woodpecker              | <i>Melanerpes formicivorus</i>    | 1          | 1         | 1      |
| Bird  | <i>Aechmophorus</i> species   | <i>Aechmophorus</i> species       | 1          | 1         | 1      |
| Bird  | Anna's hummingbird            | <i>Calypte anna</i>               | 1          | 1         | 1      |
| Bird  | Belted kingfisher             | <i>Megasceryle alcyon</i>         | 1          | 1         | 1      |
| Bird  | Black-bellied whistling-duck  | <i>Dendrocygna autumnalis</i>     | 1          | 1         | 1      |
| Bird  | Blue grosbeak                 | <i>Passerina caerulea</i>         | 1          | 1         | 1      |
| Bird  | Canyon towhee                 | <i>Melospiza fusca</i>            | 1          | 1         | 1      |
| Bird  | <i>Cardinalis</i> species     | <i>Cardinalis</i> species         | 1          | 1         | 1      |
| Bird  | Cathartidae family            | Cathartidae family                | 1          | 1         | 1      |
| Bird  | Cedar waxwing                 | <i>Bombycilla cedrorum</i>        | 1          | 1         | 1      |
| Bird  | Chestnut-backed chickadee     | <i>Poecile rufescens</i>          | 1          | 1         | 1      |
| Bird  | <i>Columbina</i> species      | <i>Columbina</i> species          | 1          | 1         | 1      |
| Bird  | Common loon                   | <i>Gavia immer</i>                | 1          | 1         | 1      |
| Bird  | Common nighthawk              | <i>Chordeiles minor</i>           | 1          | 1         | 1      |
| Bird  | Common yellowthroat           | <i>Geothlypis trichas</i>         | 1          | 1         | 1      |
| Bird  | <i>Coragyps</i> species       | <i>Coragyps</i> species           | 1          | 1         | 1      |

(Continues)

TABLE 4 | (Continued)

| Group | Common name              | Species name                      | Detections | Locations | Arrays |
|-------|--------------------------|-----------------------------------|------------|-----------|--------|
| Bird  | Domestic turkey          | <i>Meleagris gallopavo</i>        | 1          | 1         | 1      |
| Bird  | Double-crested cormorant | <i>Phalacrocorax auritus</i>      | 1          | 1         | 1      |
| Bird  | <i>Dryobates</i> species | <i>Dryobates</i> species          | 1          | 1         | 1      |
| Bird  | Eastern osprey           | <i>Pandion cristatus</i>          | 1          | 1         | 1      |
| Bird  | Emu                      | <i>Dromaius novaehollandiae</i>   | 1          | 1         | 1      |
| Bird  | Estrildidae family       | Estrildidae family                | 1          | 1         | 1      |
| Bird  | <i>Falco</i> species     | <i>Falco</i> species              | 1          | 1         | 1      |
| Bird  | <i>Geopelia</i> species  | <i>Geopelia</i> species           | 1          | 1         | 1      |
| Bird  | Golden-crowned sparrow   | <i>Zonotrichia atricapilla</i>    | 1          | 1         | 1      |
| Bird  | Great crested flycatcher | <i>Myiarchus crinitus</i>         | 1          | 1         | 1      |
| Bird  | Great kiskadee           | <i>Pitangus sulphuratus</i>       | 1          | 1         | 1      |
| Bird  | Greater sage grouse      | <i>Centrocercus urophasianus</i>  | 1          | 1         | 1      |
| Bird  | Green-tailed towhee      | <i>Pipilo chlorurus</i>           | 1          | 1         | 1      |
| Bird  | Groove-billed ani        | <i>Crotophaga sulcirostris</i>    | 1          | 1         | 1      |
| Bird  | Harris's sparrow         | <i>Zonotrichia querula</i>        | 1          | 1         | 1      |
| Bird  | <i>Icterus</i> species   | <i>Icterus</i> species            | 1          | 1         | 1      |
| Bird  | <i>Junco</i> species     | <i>Junco</i> species              | 1          | 1         | 1      |
| Bird  | Juniper titmouse         | <i>Baeolophus ridgwayi</i>        | 1          | 1         | 1      |
| Bird  | Laridae family           | Laridae family                    | 1          | 1         | 1      |
| Bird  | Lesser goldfinch         | <i>Spinus psaltria</i>            | 1          | 1         | 1      |
| Bird  | Lesser nighthawk         | <i>Chordeiles acutipennis</i>     | 1          | 1         | 1      |
| Bird  | Long-billed curlew       | <i>Numenius americanus</i>        | 1          | 1         | 1      |
| Bird  | Mangrove cuckoo          | <i>Coccyzus minor</i>             | 1          | 1         | 1      |
| Bird  | <i>Myiarchus</i> species | <i>Myiarchus</i> species          | 1          | 1         | 1      |
| Bird  | Northern oriole          | <i>Icterus galbula</i>            | 1          | 1         | 1      |
| Bird  | Oak titmouse             | <i>Baeolophus inornatus</i>       | 1          | 1         | 1      |
| Bird  | <i>Otus</i> species      | <i>Otus</i> species               | 1          | 1         | 1      |
| Bird  | Paridae family           | Paridae family                    | 1          | 1         | 1      |
| Bird  | <i>Passerina</i> species | <i>Passerina</i> species          | 1          | 1         | 1      |
| Bird  | Pelecaniformes order     | Pelecaniformes order              | 1          | 1         | 1      |
| Bird  | Ptilonorhynchidae family | Ptilonorhynchidae family          | 1          | 1         | 1      |
| Bird  | Pyrrhuloxia              | <i>Cardinalis sinuatus</i>        | 1          | 1         | 1      |
| Bird  | <i>Quiscalus</i> species | <i>Quiscalus</i> species          | 1          | 1         | 1      |
| Bird  | Red-headed woodpecker    | <i>Melanerpes erythrocephalus</i> | 1          | 1         | 1      |
| Bird  | Rock dove                | <i>Columba livia</i>              | 1          | 1         | 1      |
| Bird  | Ruby-crowned kinglet     | <i>Regulus calendula</i>          | 1          | 1         | 1      |
| Bird  | Russet-backed thrush     | <i>Catharus ustulatus</i>         | 1          | 1         | 1      |

(Continues)

TABLE 4 | (Continued)

| Group                 | Common name               | Species name                     | Detections | Locations | Arrays |
|-----------------------|---------------------------|----------------------------------|------------|-----------|--------|
| Bird                  | Sagebrush sparrow         | <i>Artemisiospiza nevadensis</i> | 1          | 1         | 1      |
| Bird                  | <i>Setophaga</i> species  | <i>Setophaga</i> species         | 1          | 1         | 1      |
| Bird                  | Snowy egret               | <i>Egretta thula</i>             | 1          | 1         | 1      |
| Bird                  | Swamp sparrow             | <i>Melospiza georgiana</i>       | 1          | 1         | 1      |
| Bird                  | <i>Toxostoma</i> species  | <i>Toxostoma</i> species         | 1          | 1         | 1      |
| Bird                  | Veery                     | <i>Catharus fuscescens</i>       | 1          | 1         | 1      |
| Bird                  | Virginia rail             | <i>Rallus limicola</i>           | 1          | 1         | 1      |
| Bird                  | Western grebe             | <i>Aechmophorus occidentalis</i> | 1          | 1         | 1      |
| Bird                  | White-faced ibis          | <i>Plegadis chihi</i>            | 1          | 1         | 1      |
| Bird                  | Wood stork                | <i>Mycteria americana</i>        | 1          | 1         | 1      |
| Bird                  | Zone-tailed hawk          | <i>Buteo albonotatus</i>         | 1          | 1         | 1      |
| Domestic/feral mammal | Domestic cattle           | <i>Bos taurus</i>                | 24,507     | 359       | 50     |
| Domestic/feral mammal | Domestic dog              | <i>Canis familiaris</i>          | 16,802     | 1324      | 194    |
| Domestic/feral mammal | Domestic cat              | <i>Felis catus</i>               | 9469       | 681       | 99     |
| Domestic/feral mammal | Domestic horse            | <i>Equus caballus</i>            | 2598       | 137       | 38     |
| Domestic/feral mammal | Domestic goat             | <i>Capra aegagrus hircus</i>     | 674        | 13        | 5      |
| Domestic/feral mammal | Domestic sheep            | <i>Ovis aries</i>                | 200        | 9         | 4      |
| Domestic/feral mammal | Domestic donkey           | <i>Equus asinus</i>              | 74         | 9         | 2      |
| Domestic/feral mammal | Domestic pig              | <i>Sus scrofa scrofa</i>         | 43         | 11        | 4      |
| Domestic/feral mammal | Llama                     | <i>Lama glama</i>                | 18         | 1         | 1      |
| Gastropod             | Gastropod                 | Gastropod                        | 4          | 1         | 1      |
| Human                 | Nonstaff                  | Nonstaff                         | 66,909     | 3225      | 247    |
| Human                 | Motor vehicle             | Motor vehicle                    | 25,877     | 885       | 158    |
| Human                 | Crew member               | Crew member                      | 17,879     | 5101      | 245    |
| Human                 | Horseback rider           | Horseback rider                  | 101        | 26        | 10     |
| Reptile               | Unknown reptile           | Unknown reptile                  | 477        | 48        | 14     |
| Reptile               | Common green iguana       | <i>Iguana iguana</i>             | 135        | 9         | 1      |
| Reptile               | Lizards and snakes        | Lizards and snakes               | 63         | 28        | 14     |
| Reptile               | Gopher tortoise           | <i>Gopherus polyphemus</i>       | 42         | 10        | 5      |
| Reptile               | Turtle order              | Turtle order                     | 13         | 8         | 7      |
| Reptile               | <i>Sceloporus</i> species | <i>Sceloporus</i> species        | 7          | 1         | 1      |
| Reptile               | Cuban brown anole         | <i>Anolis sagrei</i>             | 6          | 5         | 2      |

(Continues)



TABLE 4 | (Continued)

| Group       | Common name                | Species name                      | Detections | Locations | Arrays |
|-------------|----------------------------|-----------------------------------|------------|-----------|--------|
| Reptile     | Mojave desert tortoise     | <i>Gopherus agassizii</i>         | 5          | 5         | 1      |
| Reptile     | Green anole                | <i>Anolis carolinensis</i>        | 4          | 3         | 1      |
| Reptile     | Berlandier's tortoise      | <i>Gopherus berlandieri</i>       | 3          | 1         | 1      |
| Reptile     | Ornate box turtle          | <i>Terrapene ornata</i>           | 3          | 2         | 2      |
| Reptile     | American alligator         | <i>Alligator mississippiensis</i> | 1          | 1         | 1      |
| Reptile     | Common spiny-tailed iguana | <i>Ctenosaura similis</i>         | 1          | 1         | 1      |
| Reptile     | Eastern racer              | <i>Coluber constrictor</i>        | 1          | 1         | 1      |
| Reptile     | Gila monster               | <i>Heloderma suspectum</i>        | 1          | 1         | 1      |
| Reptile     | Teiidae family             | Teiidae family                    | 1          | 1         | 1      |
| Reptile     | <i>Thamnophis</i> species  | <i>Thamnophis</i> species         | 1          | 1         | 1      |
| Reptile     | Three-toed box turtle      | <i>Terrapene triunguis</i>        | 1          | 1         | 1      |
| Reptile     | Tortoise family            | Tortoise family                   | 1          | 1         | 1      |
| Reptile     | Western ribbonsnake        | <i>Thamnophis proximus</i>        | 1          | 1         | 1      |
| Wild mammal | White-tailed deer          | <i>Odocoileus virginianus</i>     | 231,713    | 4836      | 215    |
| Wild mammal | Eastern gray squirrel      | <i>Sciurus carolinensis</i>       | 182,605    | 2953      | 168    |
| Wild mammal | Northern raccoon           | <i>Procyon lotor</i>              | 78,622     | 3469      | 225    |
| Wild mammal | Eastern fox squirrel       | <i>Sciurus niger</i>              | 34,981     | 759       | 88     |
| Wild mammal | Coyote                     | <i>Canis latrans</i>              | 20,870     | 2932      | 249    |
| Wild mammal | Virginia opossum           | <i>Didelphis virginiana</i>       | 18,935     | 1948      | 174    |
| Wild mammal | Mule deer                  | <i>Odocoileus hemionus</i>        | 18,758     | 872       | 68     |
| Wild mammal | Eastern chipmunk           | <i>Tamias striatus</i>            | 17,668     | 648       | 80     |
| Wild mammal | Wild pig                   | <i>Sus scrofa</i>                 | 15,899     | 640       | 51     |
| Wild mammal | Eastern cottontail         | <i>Sylvilagus floridanus</i>      | 15,812     | 1117      | 144    |
| Wild mammal | Unknown mammal             | Unknown mammal                    | 11,424     | 1998      | 222    |
| Wild mammal | Red fox                    | <i>Vulpes vulpes</i>              | 11,390     | 930       | 124    |
| Wild mammal | Red squirrel               | <i>Tamiasciurus hudsonicus</i>    | 10,345     | 427       | 61     |
| Wild mammal | Unknown rodent             | Unknown rodent                    | 7252       | 415       | 119    |
| Wild mammal | <i>Peromyscus</i> species  | <i>Peromyscus</i> species         | 6367       | 292       | 74     |
| Wild mammal | Nine-banded armadillo      | <i>Dasypus novemcinctus</i>       | 5609       | 792       | 67     |
| Wild mammal | White-footed mouse         | <i>Peromyscus leucopus</i>        | 5349       | 67        | 19     |
| Wild mammal | Elk                        | <i>Cervus canadensis</i>          | 4466       | 315       | 29     |
| Wild mammal | Grey fox                   | <i>Urocyon cinereoargenteus</i>   | 4124       | 503       | 102    |
| Wild mammal | American black bear        | <i>Ursus americanus</i>           | 4062       | 819       | 97     |
| Wild mammal | Sciuridae family           | Sciuridae family                  | 3425       | 570       | 132    |
| Wild mammal | Bobcat                     | <i>Lynx rufus</i>                 | 3391       | 1069      | 174    |
| Wild mammal | Brown bear                 | <i>Ursus arctos</i>               | 3135       | 83        | 8      |
| Wild mammal | American bison             | <i>Bison bison</i>                | 2967       | 173       | 5      |

(Continues)

TABLE 4 | (Continued)

| Group       | Common name                      | Species name                      | Detections | Locations | Arrays |
|-------------|----------------------------------|-----------------------------------|------------|-----------|--------|
| Wild mammal | Brown rat                        | <i>Rattus norvegicus</i>          | 2927       | 70        | 5      |
| Wild mammal | Striped skunk                    | <i>Mephitis mephitis</i>          | 2777       | 655       | 146    |
| Wild mammal | Desert cottontail                | <i>Sylvilagus audubonii</i>       | 2746       | 113       | 19     |
| Wild mammal | <i>Sylvilagus</i> species        | <i>Sylvilagus</i> species         | 2615       | 246       | 55     |
| Wild mammal | Douglas's squirrel               | <i>Tamiasciurus douglasii</i>     | 2043       | 116       | 20     |
| Wild mammal | Collared peccary                 | <i>Pecari tajacu</i>              | 1633       | 133       | 15     |
| Wild mammal | Snowshoe hare                    | <i>Lepus americanus</i>           | 1601       | 142       | 30     |
| Wild mammal | Groundhog                        | <i>Marmota monax</i>              | 1417       | 176       | 45     |
| Wild mammal | California ground squirrel       | <i>Otospermophilus beecheyi</i>   | 1359       | 21        | 7      |
| Wild mammal | Leporidae family                 | Leporidae family                  | 1246       | 246       | 85     |
| Wild mammal | Black-tailed jackrabbit          | <i>Lepus californicus</i>         | 1235       | 136       | 24     |
| Wild mammal | <i>Sciurus</i> species           | <i>Sciurus</i> species            | 1203       | 188       | 61     |
| Wild mammal | Pronghorn                        | <i>Antilocapra americana</i>      | 1172       | 127       | 11     |
| Wild mammal | Western gray squirrel            | <i>Sciurus griseus</i>            | 1021       | 86        | 13     |
| Wild mammal | <i>Glaucomys</i> species         | <i>Glaucomys</i> species          | 937        | 175       | 36     |
| Wild mammal | American beaver                  | <i>Castor canadensis</i>          | 918        | 37        | 23     |
| Wild mammal | White-tailed antelope squirrel   | <i>Ammospermophilus leucurus</i>  | 839        | 48        | 5      |
| Wild mammal | Moose                            | <i>Alces alces</i>                | 749        | 156       | 23     |
| Wild mammal | Arizona black-tailed prairie dog | <i>Cynomys ludovicianus</i>       | 700        | 11        | 3      |
| Wild mammal | <i>Odocoileus</i> species        | <i>Odocoileus</i> species         | 698        | 172       | 36     |
| Wild mammal | White-tailed jackrabbit          | <i>Lepus townsendii</i>           | 697        | 52        | 14     |
| Wild mammal | Merriam's kangaroo rat           | <i>Dipodomys merriami</i>         | 694        | 26        | 4      |
| Wild mammal | <i>Neotoma</i> species           | <i>Neotoma</i> species            | 668        | 24        | 11     |
| Wild mammal | Northern flying squirrel         | <i>Glaucomys sabrinus</i>         | 630        | 99        | 29     |
| Wild mammal | Rock squirrel                    | <i>Otospermophilus variegatus</i> | 574        | 62        | 11     |
| Wild mammal | North American porcupine         | <i>Erethizon dorsatum</i>         | 523        | 167       | 39     |
| Wild mammal | Mexican flying squirrel          | <i>Glaucomys volans</i>           | 440        | 112       | 35     |
| Wild mammal | Canine family                    | Canine family                     | 418        | 276       | 114    |
| Wild mammal | Puma                             | <i>Puma concolor</i>              | 371        | 148       | 27     |
| Wild mammal | Marsh rabbit                     | <i>Sylvilagus palustris</i>       | 367        | 46        | 9      |
| Wild mammal | Black-tailed prairie dog         | <i>Cynomys ludovicianus</i>       | 364        | 15        | 3      |
| Wild mammal | Fisher                           | <i>Pekania pennanti</i>           | 341        | 174       | 33     |
| Wild mammal | Mountain cottontail              | <i>Sylvilagus nuttallii</i>       | 319        | 33        | 7      |
| Wild mammal | Grey wolf                        | <i>Canis lupus</i>                | 298        | 97        | 14     |

(Continues)

TABLE 4 | (Continued)

| Group       | Common name                    | Species name                       | Detections | Locations | Arrays |
|-------------|--------------------------------|------------------------------------|------------|-----------|--------|
| Wild mammal | North American river otter     | <i>Lontra canadensis</i>           | 278        | 57        | 31     |
| Wild mammal | Cricetidae family              | Cricetidae family                  | 261        | 44        | 17     |
| Wild mammal | Townsend's chipmunk            | <i>Neotamias townsendii</i>        | 231        | 19        | 4      |
| Wild mammal | Ord's kangaroo rat             | <i>Dipodomys ordii</i>             | 226        | 13        | 2      |
| Wild mammal | Brush rabbit                   | <i>Sylvilagus bachmani</i>         | 212        | 16        | 9      |
| Wild mammal | <i>Rattus</i> species          | <i>Rattus</i> species              | 212        | 26        | 10     |
| Wild mammal | Harris's antelope squirrel     | <i>Ammospermophilus harrisi</i>    | 198        | 17        | 5      |
| Wild mammal | Cervidae family                | Cervidae family                    | 191        | 83        | 19     |
| Wild mammal | Hooded skunk                   | <i>Mephitis macroura</i>           | 190        | 25        | 6      |
| Wild mammal | Giant kangaroo rat             | <i>Dipodomys ingens</i>            | 189        | 6         | 1      |
| Wild mammal | <i>Dipodomys</i> species       | <i>Dipodomys</i> species           | 179        | 8         | 3      |
| Wild mammal | American badger                | <i>Taxidea taxus</i>               | 177        | 95        | 32     |
| Wild mammal | Kit fox                        | <i>Vulpes macrotis</i>             | 167        | 44        | 5      |
| Wild mammal | Javan mongoose                 | <i>Urva javanica</i>               | 163        | 23        | 1      |
| Wild mammal | Desert woodrat                 | <i>Neotoma lepida</i>              | 160        | 17        | 4      |
| Wild mammal | Muskrat                        | <i>Ondatra zibethicus</i>          | 158        | 9         | 7      |
| Wild mammal | American mink                  | <i>Neovison vison</i>              | 156        | 70        | 35     |
| Wild mammal | Bushy-tailed woodrat           | <i>Neotoma cinerea</i>             | 151        | 6         | 4      |
| Wild mammal | Red wolf                       | <i>Canis rufus</i>                 | 150        | 24        | 3      |
| Wild mammal | House rat                      | <i>Rattus rattus</i>               | 143        | 10        | 4      |
| Wild mammal | White-nosed coati              | <i>Nasua narica</i>                | 112        | 17        | 4      |
| Wild mammal | Long-tailed weasel             | <i>Mustela frenata</i>             | 111        | 69        | 39     |
| Wild mammal | Mustelidae family              | Mustelidae family                  | 103        | 56        | 29     |
| Wild mammal | North American deer mouse      | <i>Peromyscus maniculatus</i>      | 102        | 15        | 6      |
| Wild mammal | <i>Neotamias</i> species       | <i>Neotamias</i> species           | 95         | 21        | 10     |
| Wild mammal | Nilgai                         | <i>Boselaphus tragocamelus</i>     | 95         | 9         | 1      |
| Wild mammal | <i>Canis</i> species           | <i>Canis</i> species               | 94         | 48        | 21     |
| Wild mammal | Eastern woodrat                | <i>Neotoma floridana</i>           | 91         | 22        | 9      |
| Wild mammal | Dusky-footed woodrat           | <i>Neotoma fuscipes</i>            | 85         | 4         | 2      |
| Wild mammal | Least chipmunk                 | <i>Neotamias minimus</i>           | 82         | 9         | 7      |
| Wild mammal | American marten                | <i>Martes americana</i>            | 81         | 44        | 13     |
| Wild mammal | Cotton mouse                   | <i>Peromyscus gossypinus</i>       | 75         | 9         | 2      |
| Wild mammal | <i>Mephitis</i> species        | <i>Mephitis</i> species            | 71         | 14        | 4      |
| Wild mammal | <i>Sorex</i> species           | <i>Sorex</i> species               | 71         | 2         | 2      |
| Wild mammal | Golden mantled ground squirrel | <i>Callospermophilus lateralis</i> | 69         | 6         | 3      |
| Wild mammal | Ringtail                       | <i>Bassariscus astutus</i>         | 64         | 22        | 8      |

(Continues)

TABLE 4 | (Continued)

| Group       | Common name                 | Species name                | Detections | Locations | Arrays |
|-------------|-----------------------------|-----------------------------|------------|-----------|--------|
| Wild mammal | Abert's squirrel            | <i>Sciurus aberti</i>       | 57         | 15        | 3      |
| Wild mammal | Western spotted skunk       | <i>Spilogale gracilis</i>   | 57         | 26        | 12     |
| Wild mammal | Carnivora order             | Carnivora order             | 55         | 49        | 29     |
| Wild mammal | Swamp rabbit                | <i>Sylvilagus aquaticus</i> | 55         | 13        | 4      |
| Wild mammal | Swift fox                   | <i>Vulpes velox</i>         | 55         | 16        | 4      |
| Wild mammal | Arizona gray squirrel       | <i>Sciurus arizonensis</i>  | 52         | 7         | 3      |
| Wild mammal | Meadow jumping mouse        | <i>Zapus hudsonius</i>      | 52         | 7         | 2      |
| Wild mammal | <i>Mustela</i> species      | <i>Mustela</i> species      | 51         | 22        | 14     |
| Wild mammal | White-tailed prairie dog    | <i>Cynomys leucurus</i>     | 51         | 2         | 1      |
| Wild mammal | Cliff chipmunk              | <i>Neotamias dorsalis</i>   | 49         | 9         | 3      |
| Wild mammal | Southern plains woodrat     | <i>Neotoma micropus</i>     | 47         | 5         | 2      |
| Wild mammal | Stoat                       | <i>Mustela erminea</i>      | 45         | 27        | 19     |
| Wild mammal | American hog-nosed skunk    | <i>Conepatus leuconotus</i> | 44         | 15        | 4      |
| Wild mammal | <i>Lepus</i> species        | <i>Lepus</i> species        | 42         | 18        | 6      |
| Wild mammal | Mexican woodrat             | <i>Neotoma mexicana</i>     | 42         | 6         | 2      |
| Wild mammal | Muridae family              | Muridae family              | 39         | 15        | 10     |
| Wild mammal | Mephitidae family           | Mephitidae family           | 35         | 19        | 9      |
| Wild mammal | Cetartiodactyla order       | Cetartiodactyla order       | 25         | 20        | 9      |
| Wild mammal | Mountain beaver             | <i>Aploadontia rufa</i>     | 22         | 11        | 3      |
| Wild mammal | Eastern spotted skunk       | <i>Spilogale putorius</i>   | 20         | 12        | 7      |
| Wild mammal | Desert kangaroo rat         | <i>Dipodomys deserti</i>    | 14         | 3         | 3      |
| Wild mammal | Hispid cotton rat           | <i>Sigmodon hispidus</i>    | 13         | 4         | 4      |
| Wild mammal | Woodland jumping mouse      | <i>Napaeozapus insignis</i> | 12         | 3         | 3      |
| Wild mammal | <i>Tamias</i> species       | <i>Tamias</i> species       | 11         | 3         | 2      |
| Wild mammal | <i>Ursus</i> species        | <i>Ursus</i> species        | 11         | 9         | 7      |
| Wild mammal | Hispid pocket mouse         | <i>Chaetodipus hispidus</i> | 10         | 1         | 1      |
| Wild mammal | <i>Tamiasciurus</i> species | <i>Tamiasciurus</i> species | 10         | 4         | 3      |
| Wild mammal | Yellow-pine chipmunk        | <i>Neotamias amoenus</i>    | 10         | 3         | 2      |
| Wild mammal | Unknown bat                 | Unknown bat                 | 9          | 9         | 6      |
| Wild mammal | Soricidae family            | Soricidae family            | 9          | 3         | 2      |
| Wild mammal | Appalachian cottontail      | <i>Sylvilagus obscurus</i>  | 8          | 4         | 2      |
| Wild mammal | Canada lynx                 | <i>Lynx canadensis</i>      | 8          | 5         | 3      |
| Wild mammal | Antelope jackrabbit         | <i>Lepus alleni</i>         | 7          | 5         | 2      |
| Wild mammal | Felidae family              | Felidae family              | 6          | 6         | 6      |
| Wild mammal | Merriam's chipmunk          | <i>Neotamias merriami</i>   | 6          | 2         | 1      |
| Wild mammal | Allen's chipmunk            | <i>Neotamias senex</i>      | 5          | 1         | 1      |

(Continues)

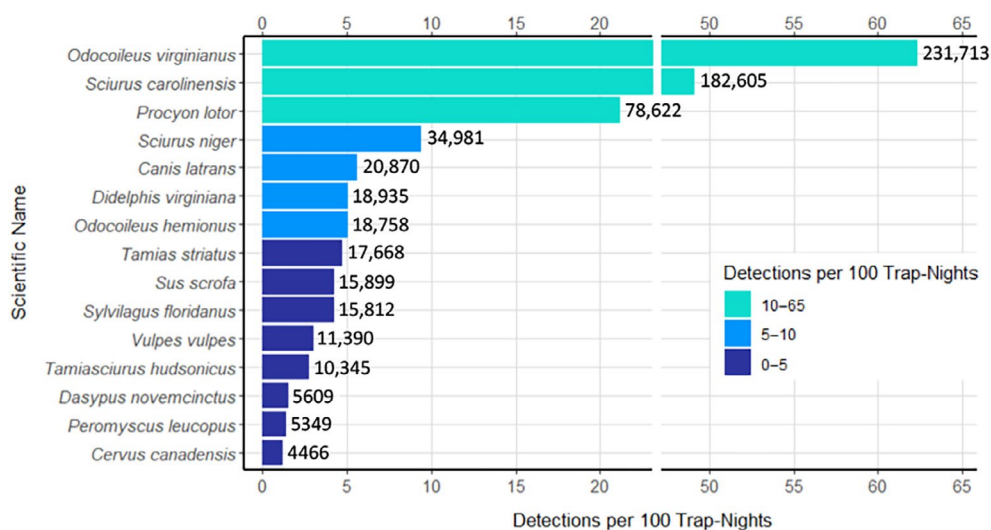
TABLE 4 | (Continued)

| Group          | Common name                    | Species name                         | Detections | Locations | Arrays |
|----------------|--------------------------------|--------------------------------------|------------|-----------|--------|
| Wild mammal    | Uinta chipmunk                 | <i>Neotamias umbrinus</i>            | 5          | 4         | 1      |
| Wild mammal    | Lodgepole chipmunk             | <i>Neotamias speciosus</i>           | 4          | 2         | 2      |
| Wild mammal    | White-throated woodrat         | <i>Neotoma albigula</i>              | 4          | 3         | 1      |
| Wild mammal    | Gemsbok                        | <i>Oryx gazella</i>                  | 3          | 2         | 1      |
| Wild mammal    | Heteromyidae family            | Heteromyidae family                  | 3          | 2         | 2      |
| Wild mammal    | Northern short-tailed shrew    | <i>Blarina brevicauda</i>            | 3          | 2         | 2      |
| Wild mammal    | Sonoma chipmunk                | <i>Neotamias sonomae</i>             | 3          | 3         | 1      |
| Wild mammal    | Southern red-backed vole       | <i>Myodes gapperi</i>                | 3          | 1         | 1      |
| Wild mammal    | Bovidae family                 | Bovidae family                       | 2          | 2         | 1      |
| Wild mammal    | Californian sea lion           | <i>Zalophus californianus</i>        | 2          | 1         | 1      |
| Wild mammal    | Fresno kangaroo rat            | <i>Dipodomys nitratoides</i>         | 2          | 1         | 1      |
| Wild mammal    | House mouse                    | <i>Mus musculus</i>                  | 2          | 1         | 1      |
| Wild mammal    | <i>Myodes</i> species          | <i>Myodes</i> species                | 2          | 1         | 1      |
| Wild mammal    | Pygmy rabbit                   | <i>Brachylagus idahoensis</i>        | 2          | 1         | 1      |
| Wild mammal    | Richardson's ground squirrel   | <i>Urocitellus richardsonii</i>      | 2          | 1         | 1      |
| Wild mammal    | Round-tailed ground squirrel   | <i>Xerospermophilus tereticaudus</i> | 2          | 2         | 2      |
| Wild mammal    | Thirteen-lined ground squirrel | <i>Ictidomys tridecemlineatus</i>    | 2          | 2         | 2      |
| Wild mammal    | Bighorn sheep                  | <i>Ovis canadensis</i>               | 1          | 1         | 1      |
| Wild mammal    | Botta's pocket gopher          | <i>Thomomys bottae</i>               | 1          | 1         | 1      |
| Wild mammal    | California chipmunk            | <i>Neotamias obscurus</i>            | 1          | 1         | 1      |
| Wild mammal    | <i>Myotis</i> species          | <i>Myotis</i> species                | 1          | 1         | 1      |
| Wild mammal    | Northern grasshopper mouse     | <i>Onychomys leucogaster</i>         | 1          | 1         | 1      |
| Wild mammal    | Panamint chipmunk              | <i>Neotamias panamintinus</i>        | 1          | 1         | 1      |
| Wild mammal    | Prairie vole                   | <i>Microtus ochrogaster</i>          | 1          | 1         | 1      |
| Wild mammal    | Red-tailed chipmunk            | <i>Neotamias ruficaudus</i>          | 1          | 1         | 1      |
| Wild mammal    | Three-striped ground squirrel  | <i>Lariscus insignis</i>             | 1          | 1         | 1      |
| Wild mammal    | Uinta ground squirrel          | <i>Urocitellus armatus</i>           | 1          | 1         | 1      |
| Wild mammal    | Wolverine                      | <i>Gulo gulo</i>                     | 1          | 1         | 1      |
| Unknown animal | Unknown animal                 | Unknown animal                       | 12,412     | 2820      | 238    |

Note: Numbers to the right indicate the number of distinct camera locations and arrays that detected the species.

participate in density estimates by using camera trap-based distance sampling (Henrich et al. 2024), which will further improve and strengthen our inferences about species densities and mammal biomass across space and time. As the SNAPSHOT network grows, we welcome additional input and

opportunities to collect additional data or incorporate experimental designs housed within our annual surveys. Continuity and expansion will undoubtedly be useful for the next generation of ecologists by providing baseline data and a crowd-sourced grassroots model of long-term mammal monitoring.



**FIGURE 3** | Number of detections per 100 camera trap-nights for the 15 most detected wild mammal species in SNAPSHOT USA 2019–2023, calculated by using the total number of trap-nights across all 5 years. The number of total detections is provided at the end of each species bar.

### Affiliations

<sup>1</sup>Conservation Ecology Center, Smithsonian's National Zoo and Conservation Biology Institute, Front Royal, Virginia, USA | <sup>2</sup>Research and Collections, North Carolina Museum of Natural Sciences, Raleigh, North Carolina, USA | <sup>3</sup>College of Natural Resources, North Carolina State University, Raleigh, North Carolina, USA | <sup>4</sup>Department of Forestry and Natural Resources, University of Kentucky, Lexington, Kentucky, USA | <sup>5</sup>Department of Natural Resources Science, University of Rhode Island, Kingston, Rhode Island, USA | <sup>6</sup>Haub School of Environment and Natural Resources, University of Wyoming, Laramie, Wyoming, USA | <sup>7</sup>Horticulture and Natural Resources, Kansas State University, Manhattan, Kansas, USA | <sup>8</sup>Research Division, Craighead Beringia South, Kelly, Wyoming, USA | <sup>9</sup>Department of Biology, Middlebury College, Middlebury, Vermont, USA | <sup>10</sup>Illinois Natural History Survey, Prairie Research Institute, University of Illinois, Champaign, Illinois, USA | <sup>11</sup>School of Natural Resources and the Environment, University of Arizona, Tucson, Arizona, USA | <sup>12</sup>Department of Biology, University of Nebraska Omaha, Omaha, Nebraska, USA | <sup>13</sup>Department of Biological Sciences, Southern Illinois University Edwardsville, Edwardsville, Illinois, USA | <sup>14</sup>Department of Biology, Mitchell Community College, Statesville, North Carolina, USA | <sup>15</sup>Wisconsin Department of Natural Resources, Madison, Wisconsin, USA | <sup>16</sup>USDA Forest Service, Pacific Northwest Research Station, Corvallis, Oregon, USA | <sup>17</sup>Department of Fisheries, Wildlife, and Conservation, Oregon State University, Corvallis, Oregon, USA | <sup>18</sup>Department of Wildlife, Fisheries, and Aquaculture, Mississippi State University, Starkville, Mississippi, USA | <sup>19</sup>Department of Natural Sciences, University of Houston Downtown, Houston, Texas, USA | <sup>20</sup>Department of Sciences, Chelmsford Public Schools, Chelmsford, Massachusetts, USA | <sup>21</sup>Department of Fisheries and Wildlife, Michigan State University, East Lansing, Michigan, USA | <sup>22</sup>Department of Health and Natural Sciences, University of North Georgia, Dahlonega, Georgia, USA | <sup>23</sup>Department of Biology, Murray State University, Murray, Kentucky, USA | <sup>24</sup>Department of Wildlife Ecology and Conservation, North Florida Research and Education Center, University of Florida, Quincy, Florida, USA | <sup>25</sup>Texas Parks and Wildlife Department, Paducah, Texas, USA | <sup>26</sup>Wildlife Research Division, BiodiversityWorks, Vineyard Haven, Massachusetts, USA | <sup>27</sup>Department of Biology, Western Kentucky University, Bowling Green, Kentucky, USA | <sup>28</sup>School of Natural Resources, University of Nebraska-Lincoln, Lincoln, Nebraska,

USA | <sup>29</sup>Department of Biology, Bradley University, Peoria, Illinois, USA | <sup>30</sup>Point No Point Treaty Council, Poulosbo, Washington, USA | <sup>31</sup>Sky Island Alliance, Tucson, Arizona, USA | <sup>32</sup>Conservation Department, Utah's Hogle Zoo, Salt Lake City, Utah, USA | <sup>33</sup>Department of Environmental Studies and Sciences, Siena College, Loudonville, New York, USA | <sup>34</sup>Department of Biology, Cumberland Mountain Research Center, Lincoln Memorial University, Harrogate, Tennessee, USA | <sup>35</sup>Department of Biology, University of North Dakota, Grand Forks, North Dakota, USA | <sup>36</sup>Caesar Kleberg Wildlife Research Institute, Texas A&M University-Kingsville, Kingsville, Texas, USA | <sup>37</sup>Department of Ecology, Montana State University, Bozeman, Montana, USA | <sup>38</sup>Department of Forestry and Natural Resources, Purdue University, West Lafayette, Indiana, USA | <sup>39</sup>South Carolina Cooperative Fish and Wildlife Research Unit, U.S. Geological Survey, Clemson, South Carolina, USA | <sup>40</sup>Department of Ecosystem Science and Management, The Pennsylvania State University, University Park, Pennsylvania, USA | <sup>41</sup>School of Biological Sciences, Georgia Institute of Technology, Atlanta, Georgia, USA | <sup>42</sup>Department of Sciences, Northgate High School, Walnut Creek, California, USA | <sup>43</sup>Biology and Public Health Department, Truckee Meadows Community College, Reno, Nevada, USA | <sup>44</sup>Franke College of Forestry and Conservation, Wildlife Biology Program, University of Montana, Missoula, Montana, USA | <sup>45</sup>Biology Department, Texas State University-San Marcos, San Marcos, Texas, USA | <sup>46</sup>Department of Natural Resources, Lower Elwha Klallam Tribe, Port Angeles, Washington, USA | <sup>47</sup>Department of Fisheries, Wildlife and Conservation Biology, University of Minnesota, St. Paul, Minnesota, USA | <sup>48</sup>Natural Resource Management, McFadden Biostress Laboratory 141A, South Dakota State University, Brookings, South Dakota, USA | <sup>49</sup>Department of Biology, Missouri Western State University, St. Joseph, Missouri, USA | <sup>50</sup>Department of Natural Resource Ecology and Management, Oklahoma State University, Stillwater, Oklahoma, USA | <sup>51</sup>Independent Researcher, Fresno, California, USA | <sup>52</sup>School of Renewable Natural Resources, Louisiana State University, Baton Rouge, Louisiana, USA | <sup>53</sup>Environmental Sciences and Studies Department, Stonehill College, Easton, Massachusetts, USA | <sup>54</sup>Swaner Preserve and EcoCenter, Utah State University, Park City, Utah, USA | <sup>55</sup>Wildlife Research Department, The Jones Center at Ichauway, Newton, Georgia, USA | <sup>56</sup>Department of Ecology, Aaniiih Nakoda College, Harlem, Montana, USA | <sup>57</sup>Department of Biology, Randolph-Macon College, Ashland, Virginia, USA | <sup>58</sup>Division of Wildlife Conservation, Alaska Department of Fish and Game, Douglas, Alaska, USA | <sup>59</sup>Department of Biology, Appalachian State

University, Boone, North Carolina, USA | <sup>60</sup>Department of Biology, ENMU Station 33, Eastern New Mexico University, Portales, New Mexico, USA | <sup>61</sup>Department of Integrative Biology, Biodiversity Collections, The University of Texas at Austin, Austin, Texas, USA | <sup>62</sup>Department of Ecology and Evolutionary Biology, University of Connecticut, Storrs, Connecticut, USA | <sup>63</sup>Department of Life Sciences, Texas A&M University - Corpus Christi, Corpus Christi, Texas, USA | <sup>64</sup>Michigan Cooperative Fish and Wildlife Research Unit, U.S. Geological Survey, Michigan State University, East Lansing, Michigan, USA | <sup>65</sup>Conservation Department, The Clifton Institute, Warrenton, Virginia, USA | <sup>66</sup>Biology Program, Department of Natural Sciences, University of West Georgia, Carrollton, Georgia, USA | <sup>67</sup>Department of Forestry and Natural Resources, College of the Redwoods, Eureka, California, USA | <sup>68</sup>Department of Biology, Abilene Christian University, Abilene, Texas, USA | <sup>69</sup>Range Cattle Research and Education Center, University of Florida, Ona, Florida, USA | <sup>70</sup>College of Forestry, Wildlife and Environment, Auburn University, Auburn, Alabama, USA | <sup>71</sup>Department of Natural Resources and Environmental Sciences, University of Illinois Urbana-Champaign, Champaign, Illinois, USA | <sup>72</sup>Koniag Inc., Kodiak, Alaska, USA | <sup>73</sup>Department of Biological Sciences, Bridgewater State University, Bridgewater, Massachusetts, USA | <sup>74</sup>Department of Wildlife, Fisheries, and Conservation Biology, University of Maine, Orono, Maine, USA | <sup>75</sup>Department of Biological Sciences, Ohio University, Athens, Ohio, USA | <sup>76</sup>Department of Environmental Science and Technology, University of Maryland, College Park, Maryland, USA | <sup>77</sup>Department of Wildlife and Natural Resources, Tarleton State University, Stephenville, Texas, USA | <sup>78</sup>Department of Ecology and Evolutionary Biology, University of California—Santa Cruz, Santa Cruz, California, USA | <sup>79</sup>Department of Forestry, Stephen F Austin State University, Nacogdoches, Texas, USA | <sup>80</sup>Independent Researcher, Spokane, Washington, USA | <sup>81</sup>Wildlife Ecology and Conservation Science Lab, Department of Biology, Northern Michigan University, Marquette, Michigan, USA | <sup>82</sup>Science Research Initiative, University of Utah, Salt Lake City, Utah, USA | <sup>83</sup>Sageland Collaborative, Salt Lake City, Utah, USA | <sup>84</sup>Conservation Science Department, Coalition for Sonoran Desert Protection, Tucson, Arizona, USA | <sup>85</sup>Conservation Department, Archbold Biological Station, Venus, Florida, USA | <sup>86</sup>Department of Wildlife Ecology & Conservation, University of Florida, Gainesville, Florida, USA | <sup>87</sup>Conservation Department, Jacksonville Zoo & Gardens, Jacksonville, Florida, USA | <sup>88</sup>Retired Independent Researcher, Columbia, Missouri, USA | <sup>89</sup>Department of Biology, Air Force Academy, Colorado Springs, Colorado, USA | <sup>90</sup>Department of Entomology and Wildlife Ecology, University of Delaware, Newark, Delaware, USA | <sup>91</sup>CAS Behavioral Sciences, Pacific University, Forest Grove, Oregon, USA | <sup>92</sup>Department of Biological Sciences, University of Arkansas, Fayetteville, Arkansas, USA | <sup>93</sup>Department of Biology, Northwest University, Kirkland, Washington, USA | <sup>94</sup>Biology and Environmental Science Department, Bridgewater College, Bridgewater, Virginia, USA | <sup>95</sup>Department of Earth and Environmental Sciences, Vanderbilt University, Nashville, Tennessee, USA | <sup>96</sup>School of Life Sciences, University of Nevada, Las Vegas, Las Vegas, Nevada, USA | <sup>97</sup>Department of Biology, Francis Marion University, Florence, South Carolina, USA | <sup>98</sup>Connecticut State Museum of Natural History, University of Connecticut, Storrs, Connecticut, USA | <sup>99</sup>Research Division, Black Rock Forest, Cornwall, New York, USA | <sup>100</sup>Department of Ecology, Evolution, and Environmental Biology, Columbia University, New York, New York, USA | <sup>101</sup>Wildlife Department, Michigan Department of Natural Resources, Marquette, Michigan, USA | <sup>102</sup>Department of Ecology, Evolution & Natural Resources, Rutgers University, New Brunswick, New Jersey, USA | <sup>103</sup>Woodland Park Zoo, Seattle, Washington, USA | <sup>104</sup>U.S. Geological Survey, Oklahoma Cooperative Fish and Wildlife Research Unit, Oklahoma State University, Stillwater, Oklahoma, USA | <sup>105</sup>Wildlife Department, Crocodile Lake National Wildlife Refuge (CLNWR), Key Largo, Florida, USA | <sup>106</sup>Department of Biology, Missouri State University, Springfield, Missouri,

USA | <sup>107</sup>Wildlife Research Department, Vashon Nature Center, Vashon, Washington, USA | <sup>108</sup>Scenic Hudson, Poughkeepsie, New York, USA | <sup>109</sup>Department of Natural Resources and the Environment, University of New Hampshire, Durham, New Hampshire, USA | <sup>110</sup>Wyoming Game and Fish Department, Cody, Wyoming, USA | <sup>111</sup>Natural Science Division, Pepperdine University, Malibu, California, USA | <sup>112</sup>Department of Life Sciences, University of Trieste, Trieste, Italy | <sup>113</sup>Texas Parks and Wildlife Department, Austin, Texas, USA | <sup>114</sup>Mianus River Gorge Inc., Bedford, New York, USA | <sup>115</sup>Texas Military Department, Austin, Texas, USA | <sup>116</sup>School of Earth and Sustainability, Northern Arizona University, Flagstaff, Arizona, USA | <sup>117</sup>Biology Department, Southeastern Louisiana University, Hammond, Louisiana, USA | <sup>118</sup>Department of Biology, University of Wisconsin-Whitewater, Whitewater, Wisconsin, USA | <sup>119</sup>Department of Biological Sciences, Fort Hays State University, Hays, Kansas, USA | <sup>120</sup>Mammalogy Collection, Sternberg Museum of Natural History, Hays, Kansas, USA | <sup>121</sup>Department of Rangeland, Wildlife and Fisheries Management, Texas A&M University, College Station, Texas, USA | <sup>122</sup>Department of Natural Resources and Environmental Management, University of Hawai'i at Manoa, Honolulu, Hawaii, USA | <sup>123</sup>Noble Research Institute LLC, Ardmore, Oklahoma, USA | <sup>124</sup>College of Natural Resources, University of Idaho, Moscow, Idaho, USA | <sup>125</sup>Florida Keys National Wildlife Refuge Complex, Big Pine Key, Florida, USA | <sup>126</sup>School of Science and Mathematics, Pittsburg State University, Pittsburg, Kansas, USA | <sup>127</sup>Department of Biology, Austin Peay State University, Clarksville, Tennessee, USA | <sup>128</sup>US Forest Service, Northern Research Station, Morgantown, West Virginia, USA | <sup>129</sup>Department of Natural Resource Ecology and Management, Iowa State University, Ames, Iowa, USA | <sup>130</sup>Department of Geography, California State University San Marcos, San Marcos, California, USA | <sup>131</sup>The Nature Conservancy, Topeka, Kansas, USA | <sup>132</sup>School of Natural Resources and the Environment, West Virginia University, Morgantown, West Virginia, USA | <sup>133</sup>USDA Forest Service, Southern Research Station, Nacogdoches, Texas, USA | <sup>134</sup>Independent Researcher, Albuquerque, New Mexico, USA | <sup>135</sup>Wyoming Game and Fish Department, Pinedale, Wyoming, USA | <sup>136</sup>Department of Biology, University of Richmond, Richmond, Virginia, USA | <sup>137</sup>Department of Sciences, Newburgh Enlarged City School District, St Newburgh, New York, USA | <sup>138</sup>Ecology Research Department, Cary Institute of Ecosystem Studies, Millbrook, New York, USA | <sup>139</sup>Science Department, Fort Peck Community College, Poplar, Montana, USA | <sup>140</sup>Natural Resources Department, Port Gamble S'Klallam Tribe, Kingston, Washington, USA | <sup>141</sup>Biological Sciences, Plymouth State University, Plymouth, New Hampshire, USA | <sup>142</sup>Biological Sciences Department, Utah Tech University, St. George, Utah, USA | <sup>143</sup>SUNY College of Environmental Science and Forestry, New York Natural Heritage Program, Albany, New York, USA | <sup>144</sup>Department of Biological Sciences, Colorado Mesa University, Grand Junction, Colorado, USA | <sup>145</sup>Department of Biological Sciences, Kent State University, Kent, Ohio, USA | <sup>146</sup>Ecology Department, Bear Creek Nature Center, Chattahoochee Hills, Georgia, USA | <sup>147</sup>Natural Resources Department, Texas A&M Natural Resources Institute, College Station, Texas, USA | <sup>148</sup>Department of Environmental Biology, State University of New York College of Environmental Science and Forestry, Syracuse, New York, USA | <sup>149</sup>Tufts Center for Conservation Medicine, Cummings School of Veterinary Medicine, Tufts University, North Grafton, Massachusetts, USA | <sup>150</sup>Environmental Studies Department, Gettysburg College, Gettysburg, Pennsylvania, USA | <sup>151</sup>Huston-Brumbaugh Nature Center, University of Mount Union, Alliance, Ohio, USA

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### Conflicts of Interest

The authors declare no conflicts of interest.

### Data Availability Statement

The curated and standardised SNAPSHOT USA 2019–2023 data will be available for public download from the Dryad repository upon publication: <https://doi.org/10.5061/dryad.k0p2ngfhn>. The data are available now through this Reviewer Link: <http://datadryad.org/stash/share/YCekP1hIrZyG1qQ-n7yooU0RtnI1tCJ88Anakno191k>. The original SNAPSHOT USA 2019–2023 data are available from separate SNAPSHOT USA projects on WI within the SNAPSHOT USA Initiative.

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