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DATA ARTICLE

SNAPSHOT USA 2024: Year 6 of the Coordinated National Camera Trap Survey of the United States

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ABSTRACT

Motivation: SNAPSHOT USA is an annual, multi-contributor 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 2024 contains 377,427 records of camera trap image sequence data and 3127 records of camera trap deployment metadata.

Spatial Location and Grain: Data were collected across the United States of America in 49 states, 12 ecoregions and many ecosystems.

Time Period and Grain: Data were collected between 1 August and 19 December in 2024.

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 2024 comprises two .csv files. The original data can be found within the SNAPSHOT USA 2024 project on the Wildlife Insights platform.

1 | Introduction

In recent years, it has become widely recognized that accurate monitoring of global biodiversity loss requires both long-term and large-scale studies on wildlife communities. This is difficult for most single entities to accomplish, due to logistical and financial barriers, but becomes more feasible when multiple stakeholders coordinate efforts to maximize their collective capacity (Kühl et al. 2020). These studies often rely on large numbers of dedicated volunteers and community scientists to collect biodiversity data at the necessary scales. Yet, while some volunteer-based surveys are structured and coordinated (e.g., North American Breeding Bird Survey; European Butterfly Monitoring Scheme), most are unstructured, and the data are opportunistically collected by participants (e.g., iNaturalist) (Kelling et al. 2019). Unstructured data can provide valuable biodiversity insights that complement structured data (Katzer et al. 2025), but structured survey methods are preferred because they account for sampling effort and therefore provide valuable 'presence/absence' data (Herrera et al. 2025). Among these structured methods is the motion-triggered camera trap survey, because it automatically provides 'absence' data for target species by not photographing them while continuing to function. This method has gained popularity in recent years due to studies demonstrating that camera traps are highly effective at detecting a wide range of mammal species, are comparable or superior to alternative survey methods and can facilitate standardized data collection (Wearn and Glover-Kapfer 2019). It has also been shown that camera trap surveys can be effectively scaled up to a macrosystem level through the inclusion of trained volunteers (Lasky et al. 2021; McShea et al. 2016). Since many mammal species are elusive and nocturnal, volunteer-supported camera trap surveys are an effective alternative method to capture these species when compared with the typical daytime observations recorded by non-scientist observers (Bedson et al. 2021; Ditmer et al. 2021; Forti and Szabo 2025). For these reasons, camera traps have been proposed as an essential tool in collecting primarily mammal data for global biodiversity monitoring initiatives (Steenweg et al. 2017).

The SNAPSHOT USA project was created in 2019 as a collaborative effort by researchers and community scientists at diverse institutions to achieve long-term mammal monitoring goals by deploying camera traps across the United States. The project uses a shared protocol to annually collect camera trap data across the country and produce data that can be used to examine nationwide trends of mammal communities in relation to

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environmental and anthropogenic factors. The data collection period is September through October each year and, although the focus is on mammals, 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 one million observations of free-ranging mammals submitted by collaborators from over 200 institutions across all 50 states. Collaborating institutions include public and private colleges and universities, high schools, federal and tribal government agencies, and nonprofit organizations. The resulting data have been used to explore a wide variety of research questions, including the impact of climate, food and human factors on mammal community assemblages (Kays et al. 2024), the responses of diverse mammal species to changes in human activity (Burton et al. 2024) and the influence of habitat and climate on species distributions (Tourani et al. 2023).

While the first 3 years of the survey were published separately (Cove et al. 2021; Kays et al. 2022; Shamon et al. 2024), the years 2022 and 2023 were included only in the SNAPSHOT USA 2019–2023 publication (Rooney et al. 2025). This study combined and standardized the first 5 years of the project to eliminate inconsistencies across years and facilitate use of the complete dataset. Here, we provide the project protocol and data management guidelines as well as a summary of the sixth year of data collected in 2024 by the SNAPSHOT USA camera trap survey.

2 | Methods

2.1 | Data Collection Protocol and Coordination

SNAPSHOT USA 2024 followed the same data collection protocol used in previous years of the survey and was coordinated by the SNAPSHOT USA Survey Coordinator. When the project began in 2019, the originators (William McShea, Roland Kays and Michael Cove) developed a protocol to survey mammals greater than 100 g and large identifiable birds (Cove et al. 2021). The primary requirements are that cameras must be unbaited and set at approximately 50 cm height across an array of at least eight cameras with a minimum distance of 200 m and a maximum of 5 km between them. Contributors were required to use a minimum of seven cameras in previous years, but this was increased to eight in 2024 to reduce the risk of contributors failing to reach the minimum number of 400 camera trap-nights per array. With one additional camera, contributors can obtain the minimum number of nights even when one camera fails to operate. The data collection period for SNAPSHOT USA is 1 September through 31 October with a 2-week leeway on either side. This timeframe was selected primarily to facilitate participation by academic institutions since many professors expressed an interest in incorporating SNAPSHOT USA into one of their fall undergraduate courses. Some contributors to SNAPSHOT USA 2024 started collecting data earlier or deployed cameras later based on location or logistics; we chose to include data from 1 August through 29 December in this dataset. This is consistent with the timeframe included in the SNAPSHOT USA 2019–2023 publication (Rooney et al. 2025).

The camera trap arrays, referred to as 'subprojects' in the Wildlife Insights (WI) camera trap image repository (Ahumada et al. 2020), were characterized by a combination of habitat type and development level, as determined by each subproject principal investigator (PI). If cameras were set facing roads, trails or water, this is noted in the 'feature_type' category in the metadata. SNAPSHOT USA arrays vary in geographic size, the number of cameras deployed in each array and the spatial design of the camera array—a characteristic adopted to encourage contributions by 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.

Although survey contributors are not required to use specific camera makes or models and may use multiple makes/models in a single array, all cameras must meet several minimum capability requirements and be set to specific settings. The cameras must be motion-sensitive, have an infrared flash and have a fast (< 0.5 s) trigger speed. They should be set to take 3–5 image bursts per trigger without a quiet period between triggers. When contributors cannot set their cameras to these settings for any reason, they must note these discrepancies in the deployment metadata. Contributors can find examples of permitted makes and models in the SNAPSHOT USA protocol guidelines document on the project website (https://www.snapshot-usa.org/).

In the early years of the project, from 2019 to 2022, the originators shared the tasks of recruiting new contributors, conducting training sessions, providing updates during the field season, cleaning the data and producing the data papers. This changed in 2022 when the rapid growth of SNAPSHOT USA necessitated the hiring of a full-time Survey Coordinator. Since then, it has been the role of the coordinator to perform these tasks while the originators devote more time to producing original research using the SNAPSHOT USA data. The coordinator actively recruits new participants by attending and presenting at scientific conferences throughout the year, directly contacting researchers who use camera traps via email and engaging in outreach opportunities. The core SNAPSHOT USA team, consisting of the originators and the coordinator, meets virtually every 2 weeks throughout the year and in person once or twice per year.

To participate in a SNAPSHOT USA survey, prospective contributors must submit an online registration form, available on the SNAPSHOT USA website, that requires basic information on their planned survey location (state, habitat type and development level). All registered participants then receive an email in July welcoming them to the project and encouraging them to attend a protocol training webinar in mid-August. This training provides background information on the SNAPSHOT USA project and details on the protocol requirements. Another webinar in late September is dedicated

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to training contributors on using the WI platform for the SNAPSHOT USA project. Both training sessions are recorded, and the recordings and presentation slides are shared with the contributors immediately after the sessions. Finally, the coordinator sends periodic reminders and updates, around every 2–3 weeks, to the contributors throughout the field and data processing seasons. These emails are aimed at reducing the frequency of common mistakes and ensuring everyone is on track with uploading and identifying their data. Once all images are identified and the dataset has been cleaned, the coordinator shares it with all contributors.

2.2 | New in 2024: Density Estimates

The SNAPSHOT USA 2024 survey represents the first year that contributors were provided the opportunity to estimate densities of animals in their survey areas by using camera trap-based distance sampling (Henrich et al. 2024). This optional component was led by a core SNAPSHOT USA team member, Roland Kays, and required minimal extra effort on the part of the contributors. To participate, contributors were required to 'calibrate' their cameras by taking images of a series of numbered signs every 3 m up to 24 m (or the maximum detection distance). Contributors were also asked to ensure that their camera locations were representative (i.e., 'random' or grid, no trails or water sources) of each study area. This did not affect all density estimate participants, but did result in some selecting new, randomly generated locations. Of 184 total arrays, 73 also contributed toward the density estimates study. The data from this study are currently being analysed and we continued this component in 2025.

The camera calibrations are essential to the density estimation process because they provide reference images of known distances for the Artificial Intelligence (AI) tools that estimate the position of animals in front of the camera. These AI tools include a deep learning algorithm that creates relative depth images of the calibration photos and MegaDetector 5.0, which creates bounding boxes around animals detected in images (Henrich et al. 2024). Once the observation distances for all animals detected by the calibrated cameras are estimated, it is possible to use camera trap distance sampling (CTDS) to estimate their population density. There was no minimum number of calibration distances required because the maximum detection distance varied widely depending on habitat type. For example, cameras placed in dense forests often had a maximum detection distance of 9 m and therefore were calibrated to that distance. The calibration images were identified as 'Calibration distance' within Wildlife Insights.

To facilitate participation, the calibration signs were constructed and mailed by Roland to all contributors who registered for the density study through a separate Google Form in advance of the SNAPSHOT USA 2024 season. However, shipping delays and late registrations resulted in several density study participants creating their own signs by following detailed instructions and using those instead. Since the signs are simple and cheap to construct, this did not prevent anyone from participating and resulted in equally effective signs. After repeated calibrations by SNAPSHOT USA team members, it was found that the camera calibrations are most successfully done in pairs, with one individual holding the signs at the appropriate distances and the other triggering the camera by running through the field of view about 2 m in front of the camera. Calibration teams used field tape measures to ensure correct measurements of the distances and held the signs at approximately the centre of the horizontal field of view (Figure 1).

FIGURE 1 | A SNAPSHOT USA team member holding the 6: 1-m distance sign during the calibration process for a camera as part of the density estimate study in 2024.

2.3 | Data Verification

As with previous SNAPSHOT USA projects, SNAPSHOT USA 2024 was created as a 'Sequence' project in Wildlife Insights. This type of project automatically groups images taken within 60 s of each other into sequences of images. Each sequence within SNAPSHOT USA 2024 was classified to the narrowest taxonomic level possible by three iterations of validation. First, WI's AI model suggested a taxonomic identification. This model, trained at Google and named SpeciesNet, is used in conjunction with the object detector MegaDetector to classify detected objects to species level (Gadot et al. 2024). SpeciesNet was publicly released on GitHub in March 2025 (2025; https://github.com/google/cameratrapai). After classification by SpeciesNet, each array's PI was responsible for validating their data, fixing AI identification mistakes and approving the data they contributed to the survey. The SNAPSHOT USA Survey Coordinator then quality-checked the deployment data and as many identifications as possible. This was a multistep process that began with checking the sequence metadata for obvious timestamp errors by organizing them chronologically in Microsoft Excel, and the deployment metadata for location errors by mapping their coordinates and looking for outliers. The data contributors were notified directly of these types of errors in their data and asked to fix them on Wildlife Insights. 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 'Taxonomies' filter on WI to look for mistakes, one species at a time.

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TABLE 1 | Variable information for sequence data from SNAPSHOT USA 2024.

Variable	Potential categories	Definition/Meaning
Project	One of 4 potential text strings representing the different WI project names herein	Each project is managed separately on WI
Camera_Trap_Array	One of 184 potential text strings representing the different camera trap arrays herein	Each camera trap array represents one subproject on WI
Deployment_ID	One of 3124 potential text strings associated with specific camera trap deployments across locations	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 to multiple WI deployments from the same location
Sequence_ID	One of 368,463 potential text strings associated with a specific observation from a camera trap location	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 '2024-08-01 04:20:26' and '2024-12-19 14:22:31'	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 '2024-08-01 04:20:30' and '2024-12-19 14:22:48'	Timestamp of last camera trap photo in each camera trap sequence
Class	One of 6 potential text strings associated with different taxonomic classes	Taxonomic class of animal observed in the sequence
Order	One of 35 potential text strings associated with different taxonomic orders	Taxonomic order of animal observed in the sequence
Family	One of 80 potential text strings associated with different taxonomic families	Taxonomic family of animal observed in the sequence
Genus	One of 211 potential text strings associated with different taxonomic genera	Taxonomic genus of animal observed in the sequence
Species	One of 265 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	One of 439 potential text strings of species common names	Common name of the species observed in the sequence
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
Individual_Animal_Notes	Optional text string providing information about the images	Additional details about the animal observed in the sequence
Behavior	Optional text string providing information about behaviours visible in the images	Additional details about the behaviours exhibited by animals in the sequence

Abbreviation: WI, wildlife insights.

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TABLE 2 | Variable information for deployment data from SNAPSHOT USA 2024.

Variable	Potential categories	Definition/Meaning
Project	One of 4 potential text strings representing project name on WI	Each project is managed separately on WI
State	One of 49 potential text strings associated with the US state the camera trap array was in	State abbreviation for the state the associated camera trap array was in
Camera_Trap_Array	One of 184 potential text strings representing the different camera trap arrays herein	Each camera trap array represents a subproject in WI
Location_Name	One of 2715 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 3124 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 '2024-08-01' and '2024-11-29'	Date of the camera trap deployment
End_Date	Date camera was retrieved provided in the format: 'YYYY-MM-DD'. End_Date values are between '2024-08-02' and '2024-12-19'	Date of the camera trap retrieval
Survey_Nights	Number between 1 and 112	Number of nights the camera was active at that location
Latitude	Double precision vector between 21.35431 and 59.45263	Latitude value of camera trap location. All geographic coordinates are provided in decimal degrees (WGS 84)
Longitude	Double precision vector between −157.74838 and −68.66344	Longitude value of camera trap location. All geographic coordinates are provided in decimal degrees (WGS 84)
Habitat	One of 9 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 4 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 11 potential text strings associated with feature types	Denotes any potential features at the camera location, including water source, road (dirt or paved) and trail (game or hiking)
Feature_Type_Methodology	Optional text string providing details about the feature type	Additional details about the selected feature type
Quiet_Period	Number between 0 and 600	Number of seconds after a trigger during which motion in front of the camera will not trigger the shutter
Sensor_Height	One of 3 potential text strings associated with the height of the camera	Denotes the approximate height of the camera
Sensor_Orientation	One of 5 potential text strings associated with the angle of the camera	Denotes the angle of the camera relative to the slope in front of it
Detection_Distance	Optional number indicating the maximum distance in meters that the camera can detect movement	Maximum distance in meters that the camera can detect movement. When included, this may be either measured in the field by the contributor or the number reported by the camera manufacturer
Remarks	Optional text string providing information about the deployment	Additional information about the deployment

Abbreviation: WI, wildlife insights.

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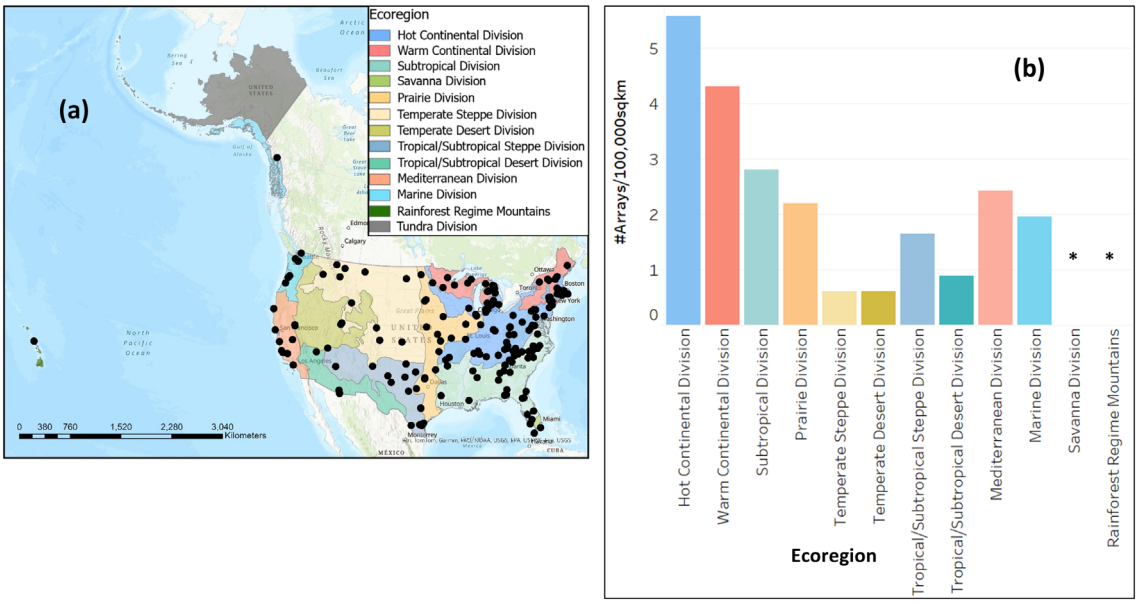

FIGURE 2 | (a) The median centres of the 184 SNAPSHOT USA 2024 camera trap arrays overlaying a simplified derivation of Bailey's ecoregions (Bailey 2016) in the United States; ecoregions currently represented by SNAPSHOT USA are in colour, while ecoregions that lack surveys are in grey. (b) Number of arrays per 100,000 km^2 (*ecoregions sampled but under 100,000 km^2).

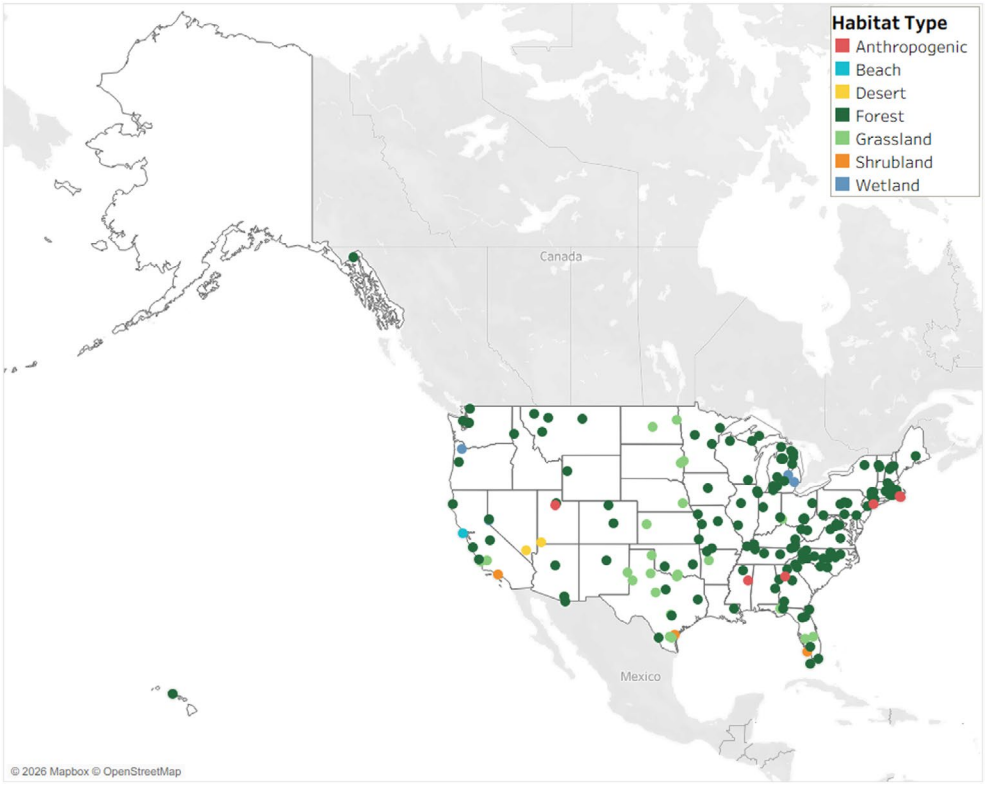

FIGURE 3 | Map of the United States showing all 184 SNAPSHOT USA 2024 camera trap arrays, with their colour representing the PI-designated habitat type of the array.

2.4 | Data Cleaning and Standardization

After being verified for accuracy within Wildlife Insights, the data underwent a secondary cleaning process in R Studio and Tableau Desktop to eliminate remaining errors and ensure standardization with previously published SNAPSHOT USA data. This process affected camera array names, deployment start and end dates, and taxonomy classifications. If the name assigned to an array in 2024 differed from the name used for that array in the SNAPSHOT USA 2019–2023 publication

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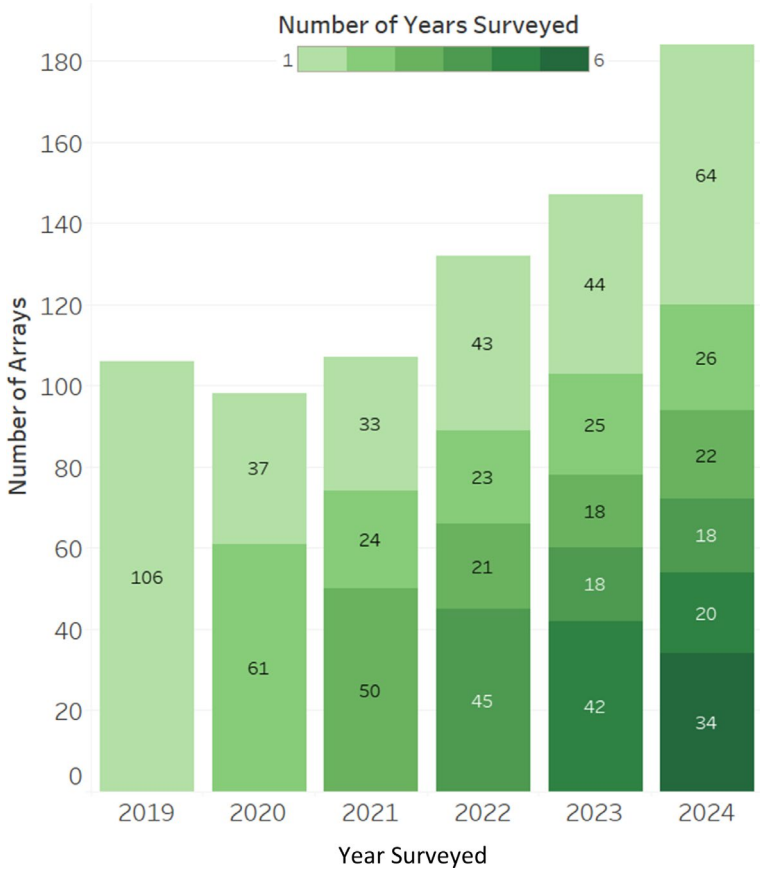

FIGURE 4 | Number of camera trap arrays surveyed for each year of SNAPSHOT USA, with colour representing the number of years those arrays were surveyed.

(Rooney et al. 2025), then it was changed to match the previous name to ensure consistency across years. However, there were two exceptions to this rule: the arrays previously named 'DeGregorio' and 'Patterson' were changed in the 2024 dataset to 'OzarkScienceCenter' and 'HurricaneCreek'. The original names reflected the surnames of the original PIs, who have since transferred those arrays to other lead researchers. Since SNAPSHOT USA is a long-term project and it is not uncommon for camera trap arrays to change ownership over time, it is preferred for contributors to name their arrays for their institution or location. When an array named for the original lead PI changes ownership and the new PI requests a new array name, they are asked to select a name related to their location or organization. The next data cleaning step consisted of modifying the start and end dates in the deployment metadata file in R Studio to match the dates of the first and last images found within each deployment in the sequences file. This was done to eliminate any mistakes made by contributors in entering the deployment dates, as this is a common source of error.

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). Since the WI taxonomy does not include most mammal subspecies, the few recorded in this dataset were modified to species level. This only affected the Grizzly Bear, which became *Ursus arctos*, and Domestic Goat, which became *Capra hircus*. 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 2024 dataset reflects the WI taxonomy used in August 2025.

2.5 | Data Use Guidelines and Data Availability

The SNAPSHOT USA 2024 dataset comprises two .csv files. The first file, 'SNAPSHOT_USA_2024_Sequences.csv', contains the species identification data, including taxonomic information and common name, for all sequences of images contributed to SNAPSHOT USA in 2024 (Table 1). The second file, 'SNAPSHOT_USA_Deployments.csv', contains the camera trap metadata for each SNAPSHOT USA 2024 deployment (Table 2).

The SNAPSHOT USA 2024 data is 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 can be found in the SNAPSHOT USA 2024 project within the SNAPSHOT USA Initiative in WI.

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TABLE 3 | Description of the distribution of sampling effort during SNAPSHOT USA 2024, consisting of 3127 deployments across 184 arrays for a total of 137,561 camera trap-nights of survey effort.

State	Array	Camera locations	Camera trap-nights
AK	Crupi	13	1019
AL	Fantle-Lepczyk	15	591
AR	UniversityOfOzarks	15	519
AR	OzarkScienceCenter	8	368
AZ	NAU	18	1410
AZ	Harrity	12	1118
AZ	SRER2	4	248
AZ	SRER1	6	245
CA	CSUMBstudents	23	917
CA	CalPolySLO	14	814
CA	Pepperdine	16	763
CA	SierraNevada	11	619
CA	PointReyes	9	548
CA	Redwoods	11	547
CA	Greenspace	12	488
CA	Carrizo	10	400
CO	McTigueCameronPeak	19	1176
CO	USAFA	19	748
CT	NyeHolman	16	849
CT	PachaugSF	8	554
DE	UDFarm	8	427
FL	Melrose	40	2661
FL	DeLuca	42	1893
FL	Torreya	24	1698
FL	Morningside	24	1390
FL	Ellington	26	1272
FL	JZGPumpkinHill	18	1137
FL	KeyDeerRefuge	15	831
FL	CrocLake	10	754
FL	NFREC	14	695
FL	RookeryBay	9	499
FL	Keel	7	406
GA	Weigel	25	1265
GA	JonesCenter	20	684
GA	Carrollton	38	543
GA	BFGrantWMA	8	496
GA	HurricaneCreek	8	372
HI	Oahu	10	718
IA	Rentz	30	1433
ID	Rachlow	27	1618
IL	CAPTURE	15	915
IL	Deshwal	13	791
IL	DePaulUni	11	531
IL	SIUE	10	516
IN	PWAMartell	12	567
IN	MSUShaw	13	512
KS	Pittsburg	10	560
KS	FortHays	14	413
KY	UKRobinson	14	691
KY	KNLT	9	666
KY	LandBetweenLakes1	15	531
KY	Darracq	13	364
LA	Hammond	10	415
MA	Tufts	23	1547
MA	Grafton	12	827
MA	BridgewaterState	10	638
MA	OB	12	603
MA	RomeCA	8	584
MA	WT	12	570
MA	EDG	11	518
ME	PenobscotForest	9	477
MI	UpperPeninsula	15	916
MI	WaWaSum	14	812
MI	FortCuster	14	806
MI	FlatRiver	15	758
MI	CampGrayling	14	744
MI	Hartwick	15	725
MI	UpperPeninsula2	10	702
MI	CranePond	12	681
MI	Wilderness	13	676
MI	ThompsonsHarbor	12	672
MI	Rockport	12	671
MI	Negwegon	14	632
MI	BengelWildlife	12	612

(Continues)

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TABLE 3 | (Continued)

State	Array	Camera locations	Camera trap-nights
MI	BoothWolfLake	10	595
MI	OUBioPreserve	8	511
MI	Shiawassee	10	481
MI	CoreyMarsh	9	477
MI	Tawas	11	448
MN	ML	59	3165
MN	PR	60	3164
MN	NRRI	20	640
MO	BullShoals	12	732
MO	MOHansen	19	538
MO	Rockhurst	9	530
MO	MWSU	7	437
MS	UniversityOfMississippi	21	1265
MS	Starkville	15	1161
MT	MTHansen	26	1372
MT	Hebblewhite	11	537
MT	RiverTrail	6	526
MT	FtBelknap	11	376
NC	Umstead	44	2580
NC	WhitePinesPreserve	16	1008
NC	MtGlum	13	973
NC	SouthMountains	14	813
NC	Schenck	13	800
NC	NCZoo	10	644
NC	Hill	18	643
NC	Highlands	8	524
NC	Iredell	10	472
NC	Wesleyan	8	434
NC	UNCP	9	429
NC	CatawbaTrailFarm	8	346
NC	M&MRanch	12	314
ND	OakvillePrairie	11	390
ND	CoteauRanch	12	344
NE	UniversityofNebraska	7	433
NH	Bartlett	19	1356
NH	QPF	9	528
NJ	Rutgers	15	768
NM	NMSLO	10	564
NM	ENMU	13	447
NV	Mojave	11	562
NV	TruckeeMeadows	9	503
NV	GalenaCreek	9	377
NY	CaryInstitute	33	1969
NY	NYC	28	1003
NY	Mianus	24	977
NY	BlackRock	15	780
NY	CranberryLake	13	640
NY	YorkCollegeCUNY	8	501
NY	ScenicHudson	15	405
OH	HustonBrumbaugh	13	1043
OH	Athens	12	540
OH	Roosenburg	7	518
OH	Zimova	12	496
OH	UCFieldCenter	7	440
OK	Ardmore	21	776
OK	JamesCollins	20	700
OK	Falconhead	17	637
OK	Lonsinger	15	551
OK	Burneyville	15	525
OR	OregonStateUni	14	728
OR	IslandCWS	11	229
PA	Rothrock	13	853
PA	CampK	12	752
PA	Gettysburg	17	711
PA	Susquehanna	10	599
RI	ArcadiaWMA	15	916
RI	URI	15	723
SC	SoEights	16	957
SC	ClemsonNorth	12	768
SD	OakLakeFS	14	828
SD	Brookings	15	730
TN	Jorge	10	946
TN	Unaka	11	763
TN	Doe	16	657
TN	LandBetweenLakes2	18	575
TN	LincolnMemUCampus	8	505

(Continues)

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TABLE 3 | (Continued)

State	Array	Camera locations	Camera trap-nights
TN	CohenWildlifeLab	8	454
TX	LaCopita	27	1353
TX	Angelina	20	955
TX	Tarleton	17	898
TX	Abilene	12	690
TX	SanMarcos	14	666
TX	Freeman	23	472
TX	NuecesDeltaPres	9	465
TX	Kingsville	9	449
TX	GeneHowe	9	444
TX	YoakumDunes	10	424
TX	Matador	10	410
TX	TAMIULaredo	11	306
UT	CottonwoodCanyon	15	832
UT	SLC	13	755
UT	Wasatch	14	537
VA	SCBI	15	907
VA	Shenandoah	40	905
VA	Pagebrook	10	563
VA	Art	16	539
VA	BC	12	511
VA	CedarsNAP	6	500
VT	Breadloaf	24	1169
VT	Watershed	16	983
WA	Johnson	12	710
WA	SUCP	12	642
WA	OlympicPeninsula	18	625
WA	Whatraclub	9	499
WI	Stenglein	8	430
WI	Whitewater	10	379
WV	UniversityResearchForest	21	878
WV	Charleston	9	496
WV	MarshallUniv	16	426
WY	Alexander	16	965
	Total	2715	137,561

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.

3 | Description of the Data

3.1 | Geographic Range of Detections

The 2024 dataset comprises 184 unique camera trap arrays distributed across 49 states and representing most ecoregions (Bailey 2016) (Figure 2a). The arrays collectively sampled 2715 distinct locations and the only state that was not sampled was Maryland. 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 (0.6–5.6 arrays per 100,000 km^2) (Figure 2b). The tundra ecoregion in the Alaska interior has not been sampled, while the temperate desert and temperate steppe ecoregions contain the fewest arrays per 100,000 km^2. Similarly, the arrays are not equally distributed across habitat types (Figure 3). Seven distinct habitat types were sampled in 2024, but most arrays (77%) were categorized by their PIs as Forest.

3.2 | Sampling Effort

SNAPSHOT USA 2024 represents the largest sampling effort accomplished by a single year of SNAPSHOT USA to date. Compared with the previous year, the number of camera arrays and camera locations increased by 37 and 487, respectively. The proportion of new camera arrays increased to 35% ($n = 184$ arrays) from 30% ($n = 147$) in the previous year (Figure 4). For each array, the number of camera trap-nights ranged from 229 to 3165 trap-nights, with a median of 639 trap-nights and mean of 747.6 (SD = 444) trap-nights per array. Total effort equalled 137,561 camera trap-nights and resulted in 360,890 observations of wild and domestic mammals, birds and humans. Of these, 292,373 (81%) were wild mammals identified to species-level. The median start date was 10 September 2024, and the median end date was 30 October 2024. The number of locations surveyed varied between arrays (4–60 locations) and 542 (20%) of the total 2715 were described by the PIs as being placed on a game or hiking trail. Although 9 arrays did not reach the target minimum of 8 locations and 14 did not reach the minimum of 400 camera trap-nights, we chose to include their data in the final dataset to recognize the total effort. The total sampling effort for each array can be found in Table 3.

3.3 | Taxonomic Range of Detections

Although the SNAPSHOT USA protocol is designed to survey mammals larger than 100 g, observations of all animal species were retained in the dataset (Table 4). These include 98 mammal species and 193 bird species. Species richness at arrays ranged from a minimum of four to a maximum of 26 mammal and large ground bird species detected in a single array (Figure 5). Across the entire dataset, the top five species detected per 100 camera trap-nights were white-tailed deer (*Odocoileus virginianus*), eastern gray squirrel (*Sciurus carolinensis*), northern raccoon

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TABLE 4 | Species detected in SNAPSHOT USA 2024, organized by species groups (Amphibian, Arthropod, Bird, Domestic/Feral Mammal, Human, Reptile, Wild Mammal, Unknown Animal) and sorted by their total number of detections.

Group	Common name	Taxon	Detections	Locations	Arrays
Amphibian	Salamander	Salamander	19	2	1
Amphibian	Frog	Frog	3	2	1
Arthropod	Insect	Insect	713	115	47
Arthropod	Butterflies and moths	Butterflies and moths	121	45	23
Arthropod	Dragonflies and damselflies	Dragonflies And damselflies	13	7	7
Arthropod	Spider	Spider	5	5	4
Arthropod	Bumblebees	Bumblebees	3	3	3
Arthropod	Hymenoptera order	Hymenoptera order	3	2	1
Bird	Bird	Bird	4110	839	163
Bird	Wild turkey	*Meleagris gallopavo*	4020	586	111
Bird	American robin	*Turdus migratorius*	2485	309	87
Bird	Blue jay	*Cyanocitta cristata*	811	255	84
Bird	Greater roadrunner	*Geococcyx californianus*	709	55	16
Bird	Mourning dove	*Zenaida macroura*	641	67	31
Bird	Passeriformes order	Passeriformes order	573	117	55
Bird	Great blue heron	*Ardea herodias*	526	46	24
Bird	Northern FLICKER	*Colaptes auratus*	382	144	74
Bird	Northern cardinal	*Cardinalis cardinalis*	333	104	52
Bird	*Corvus* species	*Corvus* species	324	55	25
Bird	Northern harrier	*Circus hudsonius*	282	10	3
Bird	Black-billed magpie	*Pica hudsonia*	278	29	9
Bird	*Anas* species	*Anas* Species	258	4	2
Bird	American crow	*Corvus brachyrhynchos*	254	68	39
Bird	Spotted towhee	*Pipilo maculatus*	253	17	7
Bird	Northern mockingbird	*Mimus polyglottos*	230	28	14
Bird	Song sparrow	*Melospiza melodia*	223	12	7
Bird	Ovenbird	*Seiurus aurocapilla*	202	28	14
Bird	Great white egret	*Ardea alba*	192	11	5
Bird	Common raven	*Corvus corax*	183	24	12
Bird	Anatidae family	Anatidae family	179	9	5
Bird	Western meadowlark	*Sturnella neglecta*	178	29	12
Bird	Common grackle	*Quiscalus quiscula*	172	59	25
Bird	Common starling	*Sturnus vulgaris*	169	20	10
Bird	Turkey vulture	*Cathartes aura*	158	26	14
Bird	Dark-eyed junco	*Junco hyemalis*	153	22	13
Bird	California quail	*Callipepla californica*	146	25	7
Bird	Owl	Owl	146	59	42

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TABLE 4 | (Continued)

Group	Common name	Taxon	Detections	Locations	Arrays
Bird	White ibis	*Eudocimus albus*	144	9	6
Bird	Ruffed grouse	*Bonasa umbellus*	140	51	22
Bird	Varied thrush	*Ixoreus naevius*	131	18	7
Bird	Wood thrush	*Hylocichla mustelina*	126	18	10
Bird	Lesser yellowlegs	*Tringa flavipes*	124	2	1
Bird	Burrowing owl	*Athene cunicularia*	114	5	4
Bird	Killdeer	*Charadrius vociferus*	112	5	3
Bird	Mallard	*Anas platyrhynchos*	112	11	7
Bird	Ring-necked pheasant	*Phasianus colchicus*	109	25	5
Bird	Gambel's quail	*Callipepla gambelii*	108	8	2
Bird	Common barn owl	*Tyto alba*	106	10	4
Bird	Hermit thrush	*Catharus guttatus*	103	17	9
Bird	Mexican jay	*Aphelocoma wollweberi*	99	10	1
Bird	Barred owl	*Strix varia*	96	49	29
Bird	Red-tailed hawk	*Buteo jamaicensis*	93	45	33
Bird	Common ground-dove	*Columbina passerina*	92	5	3
Bird	*Callipepla* species	*Callipepla* species	89	12	2
Bird	Brown thrasher	*Toxostoma rufum*	87	20	11
Bird	Northern bobwhite	*Colinus virginianus*	83	23	10
Bird	Snowy egret	*Egretta thula*	76	3	2
Bird	Columbidae family	Columbidae family	75	27	16
Bird	Pileated woodpecker	*Hylatomus pileatus*	75	53	37
Bird	Corvidae family	Corvidae family	65	37	24
Bird	Black phoebe	*Sayornis nigricans*	63	10	3
Bird	Say's phoebe	*Sayornis saya*	60	7	3
Bird	Wood duck	*Aix sponsa*	60	9	8
Bird	Bald eagle	*Haliaeetus leucocephalus*	58	6	2
Bird	White-crowned sparrow	*Zonotrichia leucophrys*	58	12	6
Bird	Sandhill crane	*Antigone canadensis*	54	12	3
Bird	Steller's jay	*Cyanocitta stelleri*	54	23	9
Bird	Turdidae family	Turdidae family	54	40	22
Bird	Accipitridae family	Accipitridae family	50	20	14
Bird	American kestrel	*Falco sparverius*	50	13	6
Bird	Eastern towhee	*Pipilo erythrophthalmus*	49	12	8
Bird	Red-bellied woodpecker	*Melanerpes carolinus*	49	31	19
Bird	Grey catbird	*Dumetella carolinensis*	48	23	16
Bird	American woodcock	*Scolopax minor*	46	12	10
Bird	Domestic chicken	*Gallus gallus domesticus*	46	1	1

(Continues)

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TABLE 4 | (Continued)

Group	Common name	Taxon	Detections	Locations	Arrays
Bird	White-throated sparrow	*Zonotrichia albicollis*	46	9	8
Bird	Cooper's hawk	*Accipiter cooperii*	44	27	16
Bird	Canada goose	*Branta canadensis*	43	12	9
Bird	*Zonotrichia* species	*Zonotrichia* species	43	6	1
Bird	Golden-fronted woodpecker	*Melanerpes aurifrons*	39	7	1
Bird	Scaled quail	*Callipepla squamata*	38	7	1
Bird	Woodhouse's scrub-jay	*Aphelocoma woodhouseii*	38	6	2
Bird	Red-shouldered hawk	*Buteo lineatus*	36	28	18
Bird	Tufted titmouse	*Baeolophus bicolor*	36	25	20
Bird	American black vulture	*Coragyps atratus*	33	7	5
Bird	*Accipiter* species	*Accipiter* Species	32	5	2
Bird	House sparrow	*Passer domesticus*	31	5	2
Bird	Myrtle warbler	*Setophaga coronata*	31	6	5
Bird	Swainson's thrush	*Catharus swainsoni*	31	9	7
Bird	Hairy woodpecker	*Leuconotopicus villosus*	30	19	14
Bird	Vesper sparrow	*Pooecetes gramineus*	30	3	1
Bird	Great horned owl	*Bubo virginianus*	27	9	8
Bird	Wilson's snipe	*Gallinago delicata*	27	3	2
Bird	Icteridae family	Icteridae Family	26	13	10
Bird	Carolina wren	*Thryothorus ludovicianus*	24	14	13
Bird	Rock wren	*Salpinctes obsoletus*	24	1	1
Bird	Accipitriformes order	accipitriformes order	23	20	15
Bird	Picidae family	Picidae family	20	18	16
Bird	California scrub-jay	*Aphelocoma californica*	18	8	2
Bird	Pacific wren	*Troglodytes pacificus*	18	5	1
Bird	Chipping sparrow	*Spizella passerina*	16	7	4
Bird	Downy woodpecker	*Dryobates pubescens*	16	13	11
Bird	Loggerhead shrike	*Lanius ludovicianus*	16	6	4
Bird	Passerellidae family	Passerellidae family	16	10	6
Bird	*Catharus* species	*Catharus* species	15	10	10
Bird	Limpkin	*Aramus guarauna*	15	2	2
Bird	Mimidae Family	Mimidae family	15	9	5
Bird	White-winged dove	*Zenaida asiatica*	15	3	2
Bird	Muscovy duck	*Cairina moschata*	14	1	1
Bird	Red-winged blackbird	*Agelaius phoeniceus*	14	5	5
Bird	Short-eared owl	*Asio flammeus*	14	5	2
Bird	Black-capped chickadee	*Poecile atricapillus*	13	11	10
Bird	*Cardinalis* species	*Cardinalis* species	13	6	3

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TABLE 4 | (Continued)

Group	Common name	Taxon	Detections	Locations	Arrays
Bird	Eastern bluebird	*Sialia sialis*	13	10	8
Bird	eastern phoebe	*Sayornis phoebe*	13	8	7
Bird	Palm warbler	*Setophaga palmarum*	13	8	5
Bird	Tyrannidae family	Tyrannidae family	13	3	2
Bird	Brown-headed cowbird	*Molothrus ater*	12	1	1
Bird	*Sayornis* species	*Sayornis* species	12	5	1
Bird	*Sturnella* species	*Sturnella* species	12	3	2
Bird	Ferruginous hawk	*Buteo regalis*	11	5	2
Bird	House finch	*Haemorhous mexicanus*	11	2	2
Bird	Ardeidae family	Ardeidae family	10	5	3
Bird	Lark sparrow	*Chondestes grammacus*	10	4	2
Bird	Strigidae family	Strigidae family	10	9	4
Bird	Troglodytidae family	Troglodytidae family	10	9	8
Bird	Sage thrasher	*Oreoscoptes montanus*	9	3	2
Bird	Swainson's hawk	*Buteo swainsoni*	9	3	3
Bird	White-breasted nuthatch	*Sitta carolinensis*	9	9	9
Bird	Eastern screech-owl	*Megascops asio*	8	4	3
Bird	Mountain bluebird	*Sialia currucoides*	8	2	2
Bird	Passeridae family	Passeridae family	8	6	4
Bird	Trochilidae family	Trochilidae family	8	7	6
Bird	Anseriformes order	Anseriformes order	7	3	3
Bird	Black-crowned night-heron	*Nycticorax nycticorax*	7	4	2
Bird	Savannah sparrow	*Passerculus sandwichensis*	7	5	3
Bird	Spruce grouse	*Falcipennis canadensis*	7	1	1
Bird	Wood stork	*Mycteria americana*	7	1	1
Bird	Green heron	*Butorides virescens*	6	4	4
Bird	Horned lark	*Eremophila alpestris*	6	1	1
Bird	Phasianidae family	Phasianidae family	6	5	3
Bird	Sharp-tailed grouse	*Tympanuchus phasianellus*	6	4	2
Bird	Western kingbird	*Tyrannus verticalis*	6	2	1
Bird	Broad-winged hawk	*Buteo platypterus*	5	2	2
Bird	California thrasher	*Toxostoma redivivum*	5	3	2
Bird	Crested caracara	*Caracara cheriway*	5	3	3
Bird	Dusky grouse	*Dendragapus obscurus*	5	4	3
Bird	Green jay	*Cyanocorax yncas*	5	4	1
Bird	Lesser prairie-CHICKEN	*Tympanuchus pallidicinctus*	5	1	1
Bird	Paridae family	Paridae family	5	4	4
Bird	Rusty blackbird	*Euphagus carolinus*	5	4	3

(Continues)

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TABLE 4 | (Continued)

Group	Common name	Taxon	Detections	Locations	Arrays
Bird	*Sialia* species	*Sialia* species	5	4	1
Bird	Tricolored heron	*Egretta tricolor*	5	1	1
Bird	White-crowned pigeon	*Patagioenas leucocephala*	5	3	1
Bird	Audubon's warbler	*Setophaga auduboni*	4	2	1
Bird	Blue-winged teal	*Spatula discors*	4	3	2
Bird	*Buteo* species	*Buteo* species	4	4	4
Bird	Cactus wren	*Campylorhynchus brunneicapillus*	4	2	1
Bird	Cattle egret	*Bubulcus ibis*	4	2	1
Bird	Chestnut-backed chickadee	*Poecile rufescens*	4	2	1
Bird	Columbiformes order	Columbiformes order	4	4	4
Bird	Greater prairie-chicken	*Tympanuchus cupido*	4	1	1
Bird	Little blue heron	*Egretta caerulea*	4	2	2
Bird	Red fox-sparrow	*Passerella iliaca*	4	3	3
Bird	Scissor-tailed flycatcher	*Tyrannus forficatus*	4	3	3
Bird	Sharp-shinned hawk	*Accipiter striatus*	4	2	2
Bird	Western bluebird	*Sialia mexicana*	4	3	1
Bird	Western screech-owl	*Otus kennicottii*	4	1	1
Bird	Bewick's wren	*Thryomanes bewickii*	3	2	1
Bird	Cardinalidae family	Cardinalidae family	3	2	2
Bird	Charadriiformes order	Charadriiformes order	3	1	1
Bird	Chihuahuan raven	*Corvus cryptoleucus*	3	2	1
Bird	*Dryocopus* species	*Dryocopus* species	3	3	2
Bird	Eastern meadowlark	*Sturnella magna*	3	1	1
Bird	Eurasian collared-dove	*Streptopelia decaocto*	3	2	1
Bird	Fish crow	*Corvus ossifragus*	3	2	1
Bird	Golden-crowned sparrow	*Zonotrichia atricapilla*	3	2	1
Bird	Hooded warbler	*Setophaga citrina*	3	2	2
Bird	Mountain quail	*Oreortyx pictus*	3	2	2
Bird	Northern waterthrush	*Parkesia noveboracensis*	3	1	1
Bird	Painted bunting	*Passerina ciris*	3	1	1
Bird	Pine warbler	*Setophaga pinus*	3	3	2
Bird	Prairie falcon	*Falco mexicanus*	3	1	1
Bird	Rock dove	*Columba livia*	3	2	1
Bird	*Seiurus* species	*Seiurus* species	3	2	1
Bird	Tricolored blackbird	*Agelaius tricolor*	3	1	1
Bird	American bittern	*Botaurus lentiginosus*	2	2	1
Bird	American white pelican	*Pelecanus erythrorhynchos*	2	1	1

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TABLE 4 | (Continued)

Group	Common name	Taxon	Detections	Locations	Arrays
Bird	Black-and-white warbler	*Mniotilta varia*	2	2	2
Bird	Boat-tailed grackle	*Quiscalus major*	2	2	2
Bird	Canyon towhee	*Melozone fusca*	2	1	1
Bird	Cathartidae family	Cathartidae family	2	1	1
Bird	Common yellowthroat	*Geothlypis trichas*	2	2	2
Bird	Curve-billed thrasher	*Toxostoma curvirostre*	2	1	1
Bird	*Cyanocitta* species	*Cyanocitta* species	2	2	2
Bird	Great-tailed grackle	*Quiscalus mexicanus*	2	1	1
Bird	Gruidae family	Gruidae family	2	1	1
Bird	House wren	*Troglodytes aedon*	2	2	2
Bird	*Junco* species	*Junco* species	2	2	2
Bird	Juniper titmouse	*Baeolophus ridgwayi*	2	1	1
Bird	Kentucky warbler	*Geothlypis formosa*	2	1	1
Bird	Long-billed curlew	*Numenius americanus*	2	2	1
Bird	Odontophoridae family	Odontophoridae family	2	2	1
Bird	Osprey	*Pandion haliaetus*	2	2	1
Bird	Piciformes order	Piciformes order	2	2	2
Bird	*Setophaga* species	*Setophaga* species	2	2	2
Bird	*Sphyrapicus* species	*Sphyrapicus* species	2	1	1
Bird	Summer tanager	*Piranga rubra*	2	1	1
Bird	*Sylviparus* species	*Sylviparus* species	2	2	2
Bird	Tundra swan	*Cygnus columbianus*	2	1	1
Bird	*Turdus* species	*Turdus* species	2	2	2
Bird	Winter wren	*Troglodytes hiemalis*	2	1	1
Bird	Yellow-headed blackbird	*Xanthocephalus xanthocephalus*	2	1	1
Bird	Acorn woodpecker	*Melanerpes formicivorus*	1	1	1
Bird	American redstart	*Setophaga ruticilla*	1	1	1
Bird	Anna's hummingbird	*Calypte anna*	1	1	1
Bird	*Ardea* species	*Ardea* species	1	1	1
Bird	Black-headed grosbeak	*Pheucticus melanocephalus*	1	1	1
Bird	Black-throated blue warbler	*Setophaga caerulescens*	1	1	1
Bird	Bullock's oriole	*Icterus bullockiorum*	1	1	1
Bird	California towhee	*Melozone crissalis*	1	1	1
Bird	Carolina chickadee	*Poecile carolinensis*	1	1	1
Bird	Cassin's sparrow	*Peucaea cassinii*	1	1	1
Bird	Cedar waxwing	*Bombycilla cedrorum*	1	1	1
Bird	Certhiidae family	Certhiidae family	1	1	1

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TABLE 4 | (Continued)

Group	Common name	Taxon	Detections	Locations	Arrays
Bird	Chuck-will's-widow	*Antrostomus carolinensis*	1	1	1
Bird	*Colaptes* species	*Colaptes* species	1	1	1
Bird	*Dryobates* species	*Dryobates* species	1	1	1
Bird	Eastern wood-pewee	*Contopus virens*	1	1	1
Bird	Falconiformes order	Falconiformes order	1	1	1
Bird	Galliformes order	Galliformes order	1	1	1
Bird	Great crested flycatcher	*Myiarchus crinitus*	1	1	1
Bird	Green-tailed towhee	*Pipilo chlorurus*	1	1	1
Bird	Grey jay	*Perisoreus canadensis*	1	1	1
Bird	*Haemorhous* species	*Haemorhous* species	1	1	1
Bird	Ladder-backed woodpecker	*Dryobates scalaris*	1	1	1
Bird	*Larus* species	*Larus* species	1	1	1
Bird	Lesser roadrunner	*Geococcyx velox*	1	1	1
Bird	Lesser scaup	*Aythya affinis*	1	1	1
Bird	Marsh wren	*Cistothorus palustris*	1	1	1
Bird	Merlin	*Falco columbarius*	1	1	1
Bird	*Monarcha* species	*Monarcha* species	1	1	1
Bird	Nashville Warbler	*Leiothlypis ruficapilla*	1	1	1
Bird	Orange-crowned warbler	*Leiothlypis celata*	1	1	1
Bird	*Parkesia* species	*Parkesia* species	1	1	1
Bird	*Passerina* species	*Passerina* species	1	1	1
Bird	Pauraque	*Nyctidromus albicollis*	1	1	1
Bird	Pelecaniformes order	Pelecaniformes order	1	1	1
Bird	*Pelecanus* species	*Pelecanus* species	1	1	1
Bird	Peregrine falcon	*Falco peregrinus*	1	1	1
Bird	*Phasianus* species	*Phasianus* species	1	1	1
Bird	*Picoides* species	*Picoides* species	1	1	1
Bird	Pine siskin	*Spinus pinus*	1	1	1
Bird	Pyrrhuloxia	*Cardinalis sinuatus*	1	1	1
Bird	Red-headed woodpecker	*Melanerpes erythrocephalus*	1	1	1
Bird	Red-shafted flicker	*Colaptes cafer*	1	1	1
Bird	Rose-breasted grosbeak	*Pheucticus ludovicianus*	1	1	1
Bird	Ruby-throated hummingbird	*Archilochus colubris*	1	1	1
Bird	Saw-whet owl	*Aegolius acadicus*	1	1	1
Bird	*Sturnus* species	*Sturnus* species	1	1	1
Bird	Sylviidae family	Sylviidae family	1	1	1
Bird	*Tyto* species	*Tyto* species	1	1	1
Bird	Verdin	*Auriparus flaviceps*	1	1	1

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TABLE 4 | (Continued)

Group	Common name	Taxon	Detections	Locations	Arrays
Bird	Yellow-bellied sapsucker	*Sphyrapicus varius*	1	1	1
Bird	Yellow-billed cuckoo	*Coccyzus americanus*	1	1	1
Bird	Yellow-breasted chat	*Icteria virens*	1	1	1
Bird	Yellow-crowned night-heron	*Nyctanassa violacea*	1	1	1
Domestic/feral mammal	Domestic cattle	*Bos taurus*	5746	138	26
Domestic/feral mammal	Domestic dog	*Canis familiaris*	4107	507	125
Domestic/feral mammal	Domestic cat	*Felis catus*	2526	248	61
Domestic/feral mammal	Domestic horse	*Equus caballus*	916	33	16
Domestic/feral mammal	Domestic sheep	*Ovis aries*	57	5	3
Domestic/feral mammal	Domestic goat	*Capra hircus*	22	8	5
Domestic/feral mammal	Domestic donkey	*Equus asinus*	15	6	2
Human	Non-staff	Non-staff	27,724	1879	178
Human	Motor vehicle	Motor vehicle	11,380	341	99
Human	Camera trapper	Camera trapper	3525	1469	147
Reptile	Lizards and snakes	Lizards and snakes	120	7	4
Reptile	Common green iguana	*Iguana iguana*	39	8	2
Reptile	Gopher tortoise	*Gopherus polyphemus*	35	6	3
Reptile	Cuban brown anole	*Anolis sagrei*	18	6	2
Reptile	Common spiny-tailed iguana	*Ctenosaura similis*	14	2	1
Reptile	Turtle order	Turtle order	11	7	3
Reptile	Eastern box turtle	*Terrapene carolina carolina*	5	4	4
Reptile	Mojave desert tortoise	*Gopherus agassizii*	4	4	1
Reptile	American alligator	*Alligator mississippiensis*	3	2	1
Reptile	Common box turtle	*Terrapene carolina*	1	1	1
Reptile	Eastern racer	*Coluber constrictor*	1	1	1
Reptile	*Iguana* species	*Iguana* species	1	1	1
Reptile	*Plestiodon* species	*Plestiodon* species	1	1	1
Reptile	Reptile	Reptile	1	1	1
Reptile	Snapping turtle	*Chelydra serpentina*	1	1	1
Wild mammal	White-tailed deer	*Odocoileus virginianus*	97,405	2139	155
Wild mammal	Eastern gray squirrel	*Sciurus carolinensis*	72,140	1239	127
Wild mammal	Northern raccoon	*Procyon lotor*	25,933	1456	162
Wild mammal	Eastern fox squirrel	*Sciurus niger*	14,941	392	71

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TABLE 4 | (Continued)

Group	Common name	Taxon	Detections	Locations	Arrays
Wild mammal	Coyote	*Canis latrans*	8731	1243	164
Wild mammal	Wild pig	*Sus scrofa*	7862	273	35
Wild mammal	Red squirrel	*Tamiasciurus hudsonicus*	6262	203	43
Wild mammal	Eastern chipmunk	*Tamias striatus*	6248	267	70
Wild mammal	Virginia opossum	*Didelphis virginiana*	5878	748	126
Wild mammal	Eastern cottontail	*Sylvilagus floridanus*	5647	448	108
Wild mammal	Mule deer	*Odocoileus hemionus*	5432	264	36
Wild mammal	White-footed mouse	*Peromyscus leucopus*	3919	29	6
Wild mammal	Mammal	Mammal	3274	1084	177
Wild mammal	Rodentia order	Rodentia order	2854	291	101
Wild mammal	Elk	*Cervus canadensis*	1906	81	14
Wild mammal	Red fox	*Vulpes vulpes*	1852	264	69
Wild mammal	Nine-banded armadillo	*Dasypus novemcinctus*	1781	279	44
Wild mammal	Grey fox	*Urocyon cinereoargenteus*	1309	211	58
Wild mammal	Bobcat	*Lynx rufus*	1279	451	111
Wild mammal	Striped skunk	*Mephitis mephitis*	1261	240	78
Wild mammal	American black bear	*Ursus americanus*	1240	366	61
Wild mammal	Sciuridae family	Sciuridae family	1120	229	78
Wild mammal	*Peromyscus* species	*Peromyscus* species	1119	90	37
Wild mammal	*Sciurus* species	*Sciurus* species	877	189	65
Wild mammal	Small mammal	Small mammal	835	205	80
Wild mammal	*Sylvilagus* species	*Sylvilagus* species	707	98	28
Wild mammal	Western gray squirrel	*Sciurus griseus*	625	40	8
Wild mammal	Rabbit and hare family	Rabbit and hare family	571	123	49
Wild mammal	Brown bear	*Ursus arctos*	488	16	3
Wild mammal	Brown rat	*Rattus norvegicus*	488	13	6
Wild mammal	*Glaucomys* species	*Glaucomys* species	453	78	29
Wild mammal	Black-tailed prairie dog	*Cynomys ludovicianus*	414	3	3
Wild mammal	House rat	*Rattus rattus*	412	13	2
Wild mammal	*Rattus* species	*Rattus* species	394	12	3
Wild mammal	Muridae family	Muridae family	381	28	13
Wild mammal	Black-tailed jackrabbit	*Lepus californicus*	372	37	10
Wild mammal	Douglas's squirrel	*Tamiasciurus douglasii*	343	28	6
Wild mammal	*Neotoma* species	*Neotoma* Species	328	5	3
Wild mammal	North American porcupine	*Erethizon dorsatum*	319	67	23
Wild mammal	American bison	*Bison bison*	307	13	2
Wild mammal	*Odocoileus* species	*Odocoileus* species	293	67	17
Wild mammal	Groundhog	*Marmota monax*	289	39	22

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TABLE 4 | (Continued)

Group	Common name	Taxon	Detections	Locations	Arrays
Wild mammal	American Beaver	*Castor canadensis*	285	6	6
Wild mammal	Desert cottontail	*Sylvilagus audubonii*	282	40	12
Wild mammal	moose	*Alces alces*	263	50	11
Wild mammal	Collared peccary	*Pecari tajacu*	251	41	7
Wild mammal	Southern flying squirrel	*Glaucomys volans*	246	54	32
Wild mammal	Snowshoe hare	*Lepus americanus*	212	30	18
Wild mammal	*Neotamias* species	*Neotamias* species	197	20	10
Wild mammal	White-tailed antelope squirrel	*Ammospermophilus leucurus*	196	14	1
Wild mammal	Rock squirrel	*Otospermophilus variegatus*	180	16	8
Wild mammal	Northern flying squirrel	*Glaucomys sabrinus*	164	36	17
Wild mammal	Merriam's kangaroo rat	*Dipodomys merriami*	135	7	1
Wild mammal	Grey wolf	*Canis lupus*	131	36	7
Wild mammal	Fisher	*Pekania pennanti*	115	59	17
Wild mammal	Horseback rider	*Homo sapiens*	104	14	9
Wild mammal	Giant kangaroo rat	*Dipodomys ingens*	94	6	1
Wild mammal	North American deermouse	*Peromyscus maniculatus*	92	8	6
Wild mammal	Long-tailed weasel	*Mustela frenata*	77	44	26
Wild mammal	Mountain cottontail	*Sylvilagus nuttallii*	74	10	2
Wild mammal	*Dipodomys* species	*Dipodomys* species	71	8	4
Wild mammal	*Muridae* species	*Muridae* species	69	29	23
Wild mammal	Cricetidae family	Cricetidae family	68	17	9
Wild mammal	American mink	*Neovison vison*	65	32	17
Wild mammal	Hooded skunk	*Mephitis macroura*	64	10	2
Wild mammal	Townsend's chipmunk	*Neotamias townsendii*	64	10	3
Wild mammal	Javan mongoose	*Urva auropunctata*	63	5	1
Wild mammal	Puma	*Puma concolor*	59	41	16
Wild mammal	American badger	*Taxidea taxus*	55	30	14
Wild mammal	Canine family	Canine family	55	46	28
Wild mammal	Carnivorous mammal	Carnivorous mammal	53	43	22
Wild mammal	Eastern woodrat	*Neotoma floridana*	53	5	5
Wild mammal	White-nosed coati	*Nasua narica*	53	9	3
Wild mammal	pronghorn	*Antilocapra americana*	50	6	3
Wild mammal	California ground squirrel	*Otospermophilus beecheyi*	49	12	5
Wild mammal	Golden mantled ground squirrel	*Callospermophilus lateralis*	47	4	2
Wild mammal	Marsh rabbit	*Sylvilagus palustris*	39	9	3
Wild mammal	Stoat	*Mustela erminea*	32	11	9
Wild mammal	American marten	*Martes americana*	31	14	5

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TABLE 4 | (Continued)

Group	Common name	Taxon	Detections	Locations	Arrays
Wild mammal	*Tamias* species	*Tamias* species	31	13	11
Wild mammal	North American river otter	*Lontra canadensis*	30	12	11
Wild mammal	*Lepus* Species	*Lepus* Species	28	11	7
Wild mammal	Ord's kangaroo rat	*Dipodomys ordii*	28	3	2
Wild mammal	Weasel family	Weasel Family	28	25	17
Wild mammal	Brush rabbit	*Sylvilagus bachmani*	27	10	3
Wild mammal	Arizona gray squirrel	*Sciurus arizonensis*	26	4	2
Wild mammal	Western spotted skunk	*Spilogale gracilis*	26	7	5
Wild mammal	Kit fox	*Vulpes macrotis*	25	3	2
Wild mammal	Cervidae family	Cervidae family	24	17	12
Wild mammal	Appalachian cottontail	*Sylvilagus obscurus*	21	2	2
Wild mammal	Cotton mouse	*Peromyscus gossypinus*	18	4	1
Wild mammal	Lodgepole chipmunk	*Neotamias speciosus*	18	2	1
Wild mammal	Desert woodrat	*Neotoma lepida*	17	4	1
Wild mammal	Skunk family	Skunk family	17	10	4
Wild mammal	Swift fox	*Vulpes velox*	16	3	1
Wild mammal	Abert's squirrel	*Sciurus aberti*	15	2	1
Wild mammal	Muskrat	*Ondatra zibethicus*	15	3	3
Wild mammal	Pinyon mouse	*Peromyscus truei*	14	1	1
Wild mammal	Bat	Bat	13	9	8
Wild mammal	Humboldt's flying squirrel	*Glaucomys oregonensis*	12	3	1
Wild mammal	Least chipmunk	*Neotamias minimus*	12	2	1
Wild mammal	Ringtail	*Bassariscus astutus*	12	6	3
Wild mammal	American hog-nosed skunk	*Conepatus leuconotus*	11	4	1
Wild mammal	*Sus* species	*Sus* species	11	4	1
Wild mammal	*Mustela* species	*Mustela* species	11	9	7
Wild mammal	Swamp rabbit	*Sylvilagus aquaticus*	10	3	3
Wild mammal	Long-eared chipmunk	*Neotamias quadrimaculatus*	8	1	1
Wild mammal	*Sorex* species	*Sorex* species	7	1	1
Wild mammal	Cetartiodactyla order	Cetartiodactyla order	6	5	3
Wild mammal	*Canis* species	*Canis* species	4	2	2
Wild mammal	Eastern spotted skunk	*Spilogale putorius*	3	1	1
Wild mammal	Cat family	Cat family	2	2	2
Wild mammal	Northern short-tailed shrew	*Blarina brevicauda*	2	1	1
Wild mammal	*Spilogale* species	*Spilogale* species	2	1	1
Wild mammal	Spotted ground squirrel	*Xerospermophilus spilosoma*	2	1	1
Wild mammal	Thirteen-lined ground squirrel	*Ictidomys tridecemlineatus*	2	2	2

(Continues)

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TABLE 4 | (Continued)

Group	Common name	Taxon	Detections	Locations	Arrays
Wild mammal	*Vulpes* species	*Vulpes* Species	2	2	1
Wild mammal	Western harvest mouse	*Reithrodontomys megalotis*	2	1	1
Wild mammal	Woodland jumping mouse	*Napaeozapus insignis*	2	1	1
Wild mammal	Belding's ground squirrel	*Urocitellus beldingi*	1	1	1
Wild mammal	Bovidae family	Bovidae family	1	1	1
Wild mammal	Lagomorpha order	Lagomorpha order	1	1	1
Wild mammal	*Mephitis* species	*Mephitis* species	1	1	1
Wild mammal	*Microtus* species	*Microtus* species	1	1	1
Wild mammal	Mountain beaver	*Aplodontia rufa*	1	1	1
Wild mammal	Nelson's kangaroo rat	*Dipodomys nelsoni*	1	1	1
Wild mammal	Nutria	*Myocastor coypus*	1	1	1
Wild mammal	Red-tailed chipmunk	*Neotamias ruficaudus*	1	1	1
Wild mammal	Uinta ground squirrel	*Urocitellus armatus*	1	1	1
	Unknown animal	Unknown animal	2606	894	164
	Calibration distance	Calibration distance	1363	918	73

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

(*Procyon lotor*), eastern fox squirrel (*Sciurus niger*) and coyote (*Canis latrans*) (Figure 6). Each detection refers to one sequence of camera trap images taken within one minute of a single camera trigger.

4 | Discussion

Although many diverse organizations contributed to SNAPSHOT USA 2024, these data were mostly collected by academic institutions. Of the 154 PIs that contributed data, 75% were affiliated with an academic institution and 67% involved at least one undergraduate student in the project. While we continue to encourage undergraduate student involvement in the survey and host an annual virtual Snapshot Student Symposium to support active student engagement with the data, we are working to recruit more collaborators within other sectors. We aim to broaden the scope of the project by including more state, federal and tribal government agencies.

However, as the network grows, we recognize that the value of additional data from new locations is tempered by the nuisance variables that come with a large dataset collected by diverse collaborators. Some of these may impact detection probability, such as the experience of field crews deploying cameras and the quality of the camera model(s) used. To avoid discrepancies in the data while expanding our contributor network, we recommend the use of hierarchical models that accommodate and account for detection bias using standard approaches and guidelines when working with SNAPSHOT USA data (Goldstein et al. 2024). We also recommend that researchers using the data account for the unbalanced sampling across habitat types, development levels and ecoregions. Finally, since SNAPSHOT USA uses a 60-s threshold to determine independent detection events, researchers should take this into consideration when conducting analyses that assume event independence.

SNAPSHOT USA is growing significantly each year in both national and international impact. The data from the national 2025 survey is currently being processed and comprises the largest number of arrays so far, with 220 participating arrays as of December 2025. Meanwhile, the SNAPSHOT GLOBAL initiative (https://snapshot-global.org) gained two new countries (Brazil and Chile) in early 2025. Inspired by the launch of SNAPSHOT EUROPE in 2021, which applied the SNAPSHOT USA protocol across many countries in Europe, the global platform was created in 2022 to reach broader audiences in recruitment and help connect a network of global camera trappers to public data. With the new South American additions, SNAPSHOT GLOBAL spans four continents and enables standardized data collection of mammal populations at the global scale. The projects SNAPSHOT EUROPE and SNAPSHOT JAPAN have collected and collated camera trap data from 2021–2024 and 2023–2024, respectively (Fukasawa et al. 2025). We encourage other large-scale camera trap initiatives to partner with SNAPSHOT networks to increase our collective capacity to monitor global biodiversity trends.

In future SNAPSHOT USA surveys, we plan to continue offering SNAPSHOT USA contributors the opportunity to participate in the optional density estimates component. This is one example of how we can expand the types of questions that can be answered using SNAPSHOT data without interfering with the overall study

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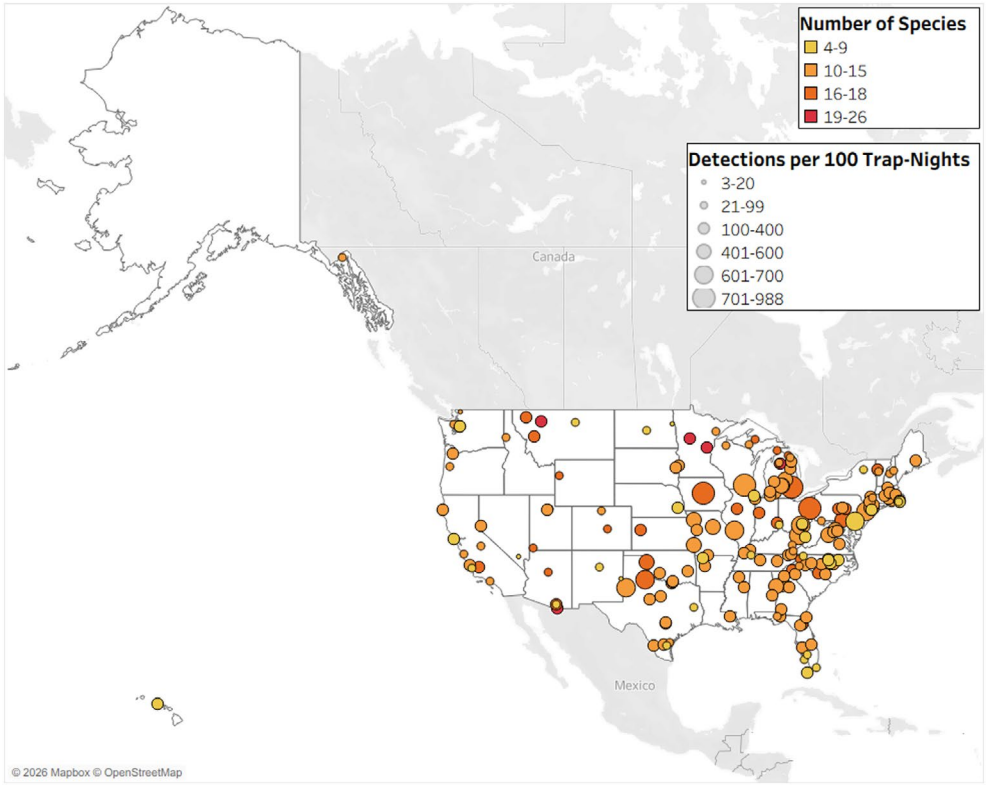

FIGURE 5 | Map of the United States showing all 184 SNAPSHOT USA 2024 camera trap arrays, with colour representing the number of identified mammal and large ground bird species and size representing the number of detections of those species per 100 camera trap-nights. Only detections of mammals and large ground birds (wild turkey [*Meleagris gallopavo*]), grouse (*Falcipennis* spp., *Bonasa* spp., *Tympanuchus* spp., *Dendragapus* spp.) or quail (*Callipepla* spp., *Oreortyx* spp.) identified to the species level were used to obtain these values and each detection represents one sequence of images captured by a camera.

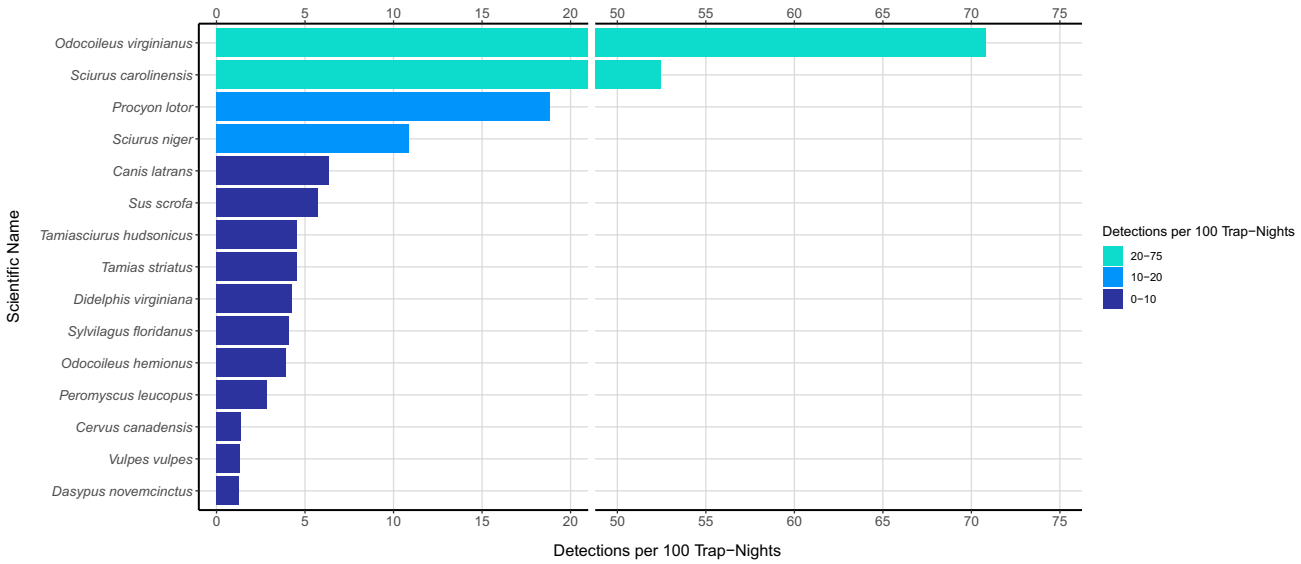

FIGURE 6 | Number of detections per 100 camera trap-nights for the 15 most detected wild mammal species in SNAPSHOT USA 2024, calculated by using the total number of trap-nights.

design. As the SNAPSHOT network grows, we welcome additional input and opportunities to collect supplemental data or incorporate experimental designs housed within our annual surveys. We are confident that continuation of this large-scale survey will benefit future ecologists by providing baseline data and a collaboration-based model of long-term mammal monitoring.

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Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

The curated SNAPSHOT USA 2024 data will be available for public download from the Dryad repository upon publication. The unique, permanent link is here: https://doi.org/10.5061/dryad.bnzs7h4qf. The data are available now through this Reviewer Link: http://datadryad.org/share/LINK_NOT_FOR_PUBLICATION/RCFmA7w7g-GWJYes7e7s_N0zhESPsug-fxPogQw9uzo. The original SNAPSHOT USA 2024 data are available from the SNAPSHOT USA 2024 project on Wildlife Insights within the SNAPSHOT USA Initiative.

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