

# Monitoring Report 2025: Great Blue Heron (*Ardea herodias*) colony along the Slate River in Crested Butte, Colorado

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## Introduction

Colonial wading birds, such as the Great Blue Heron (*Ardea herodias*), depend on specific habitat conditions to establish and maintain successful nesting colonies, which serve as critical breeding sites. These birds typically select taller trees situated near wetlands, lakes, or riverine environments that offer close proximity to suitable foraging areas (Gibbs, 1991; Carlson et al., 1996; Kazantzidis et al., 2013; Cavitt et al., 2014). Great Blue Herons often form large colonies, with dozens of nests constructed in elevated, relatively inaccessible locations that help minimize predation risk, and environmental disturbance. Nesting in colonies not only reduces individual vulnerability to predators but also may enhance opportunities for mate selection and increase rookery success through social behavior (Cottrille and Cottrille, 1958; Forbes et al., 1985; Gibbs, 1991; Butler et al., 1995). Repeated disturbances from predators or environmental stressors have been linked to colony relocation or abandonment (Gibbs, 1991; Henry et al., 1978; Vennesland, 2010). Due to the many benefits of colonial nesting, Great Blue Herons tend to show strong site fidelity between breeding seasons, often returning to the same nesting sites year after year (Dowd et al., 1985; Vols et al., 1985; Forbes et al., 1985). This behavior reflects their sensitivity to environmental conditions and social dynamics within the colony. As a result, the persistence of a rookery depends on a complex set of environmental factors, including the availability of suitable nesting and foraging habitats, as well as protection from both natural and human disturbances.

Among these factors, human disturbance has emerged as a significant and growing threat to rookery stability, particularly in landscapes undergoing increased recreational development (Vols et al., 1985; Skagen et al., 2001; Vennesland, 2010). Recreational activities such as boating, paddleboarding, hiking, and camping can disrupt key avian phenological events by altering adult attendance patterns, increasing stress and energy expenditure, and interfering with chick-rearing (Cottrille and Cottrille, 1958; Henry et al., 1978; Vennesland, 2010). These effects are heightened during sensitive periods such as nest initiation and brooding, when even brief disturbances may result in nest failure or colony-wide abandonment (Azerrad, 2012; Skagen et al., 2001). While some heron populations have demonstrated an ability to habituate to routine or predictable human activity, unpredictable disturbances tend to have more intense consequences (Vols et al., 1985, Skagen et al., 2001).

These challenges are especially pertinent in regions where rising recreational use directly overlaps with critical wildlife habitats. The Slate River Valley near Crested Butte, Colorado, exemplifies the perfect setting for observing disturbance behavior. This high-elevation riparian corridor supports a long-established Great Blue Heron rookery, which, in recent years, has become increasingly vulnerable to recreational pressure from river users and local trail networks (Magee et al., 2020; Magee & Zareba, 2019; Magee, 2022). The potential for conflict between conservation goals and expanding recreational use has prompted proactive local engagement.

In response, the Slate River Working Group, a coalition of land managers, conservation organizations, researchers, and community stakeholders, was formed to monitor ecological conditions, assess threats to wildlife, and develop strategies to unite local recreation with conservation efforts.

This study is part of an ongoing, eight-year investigation into the demography and phenology of the Slate River Great Blue Heron colony. Building on previous research, this report aims to document seasonal patterns in breeding phenology, observe the influence of hydrologic variability on nesting success, and observe the relationship between human disturbance and rookery dynamics. Previous studies have delved deeper into the relationship between human disturbance and rookery dynamics.

## Methods

### *Study Area*

The Slate River is a tributary of the East River located in the upper Gunnison Basin near Crested Butte, Colorado. Originating from a high-elevation watershed in the Elk Mountains, the river flows southward through diverse wetlands, and alpine meadows before joining the East River north of Almont, Colorado. Although smaller in size than other rivers in the area, the Slate River plays a critical role in regional hydrology and floodplain connectivity. The upper river is characterized by narrow, high-gradient channels, while the lower reach features a more complex floodplain system, with side channels and seasonally inundated meadows. Flow patterns vary throughout the year, with high spring discharge driven by snowmelt and consistent lower flows occurring through late summer. The study reach is located just off Slate River Road near Wild Bird Lane, on a portion of the Slate River characterized by riparian wetlands and floodplain connectivity. This reach has warranted increasing interest from researchers and local land managers, particularly regarding its sensitivity to the increase in recreational use and regional water quality concerns.

Between 2018 and 2025, the herons have established and occupied three distinct nesting colonies along this reach of the Slate River: the Upper Colony, the Lower Colony, and the Beaver Dam Colony (Figure 1). The Upper, and Lower colonies, located northwest of the Beaver Dam site, were historically situated in decaying stands of lodgepole pine (*Pinus contorta*). In contrast, the Beaver Dam Colony is embedded within a denser stand of lodgepole pine offering different structural and ecological conditions. During the 2024 and 2025 breeding seasons, all observed nesting activity has been concentrated exclusively within the Beaver Dam Colony.

### *Field Observation*

From March through August, we conducted field observations at the Slate River Rookery twice weekly. Each visit typically lasted between one and four hours, depending on seasonal activity. Observations were made from four primary points: Wild Bird Drive, a local residence above Wild Bird Drive (Wild Bird), Slate River Road, and Smith Hill Road. The observation periods began by surveying the Upper, Middle, and Lower colonies northwest of the Beaver Dam Colony along Slate River Road. Herons have been absent from these sites for the past two breeding seasons; however, we continue to monitor heron presence, nest viability, and whether herons are using these nests for stick resources or nesting sites. We then proceeded to the Beaver Dam Colony, where presence or absence of herons at each nest is recorded, carefully noting nest locations. Throughout the breeding season, key phenological events including heron arrival, pair formation, copulation, egg-laying, incubation, chick hatching, and fledging are recorded.

In addition to heron activity, we documented other bird species seen or heard during each visit, alongside environmental parameters such as river discharge (cfs) and water temperature (from the internet reporting Baxter Gulch stream flow: [https://waterdata.usgs.gov/nwis/uv?site\\_no=385106106571000&legacy=1](https://waterdata.usgs.gov/nwis/uv?site_no=385106106571000&legacy=1)). To evaluate potential disturbance, the number of cars, bikers, runners/hikers, motorcyclists, nearby construction projects, and dogs passing by during the observation period were recorded. Field observations were supported by the use of a spotting scope, binoculars, and a camera. Metadata were also recorded for each observation visit, including start and stop times, weather conditions, and specific observation points.

### Data Analysis

Following the conclusion of the field observation season, we evaluated the overall health of the heron rookery using three key metrics. Nest success was defined as the percentage of monitored nests that produced at least one hatched chick. Fledge success was calculated as the percentage of nests that yielded at least one chick that successfully fledged. Finally, fledging success was assessed as the proportion of all chicks hatched within the rookery that ultimately fledged.

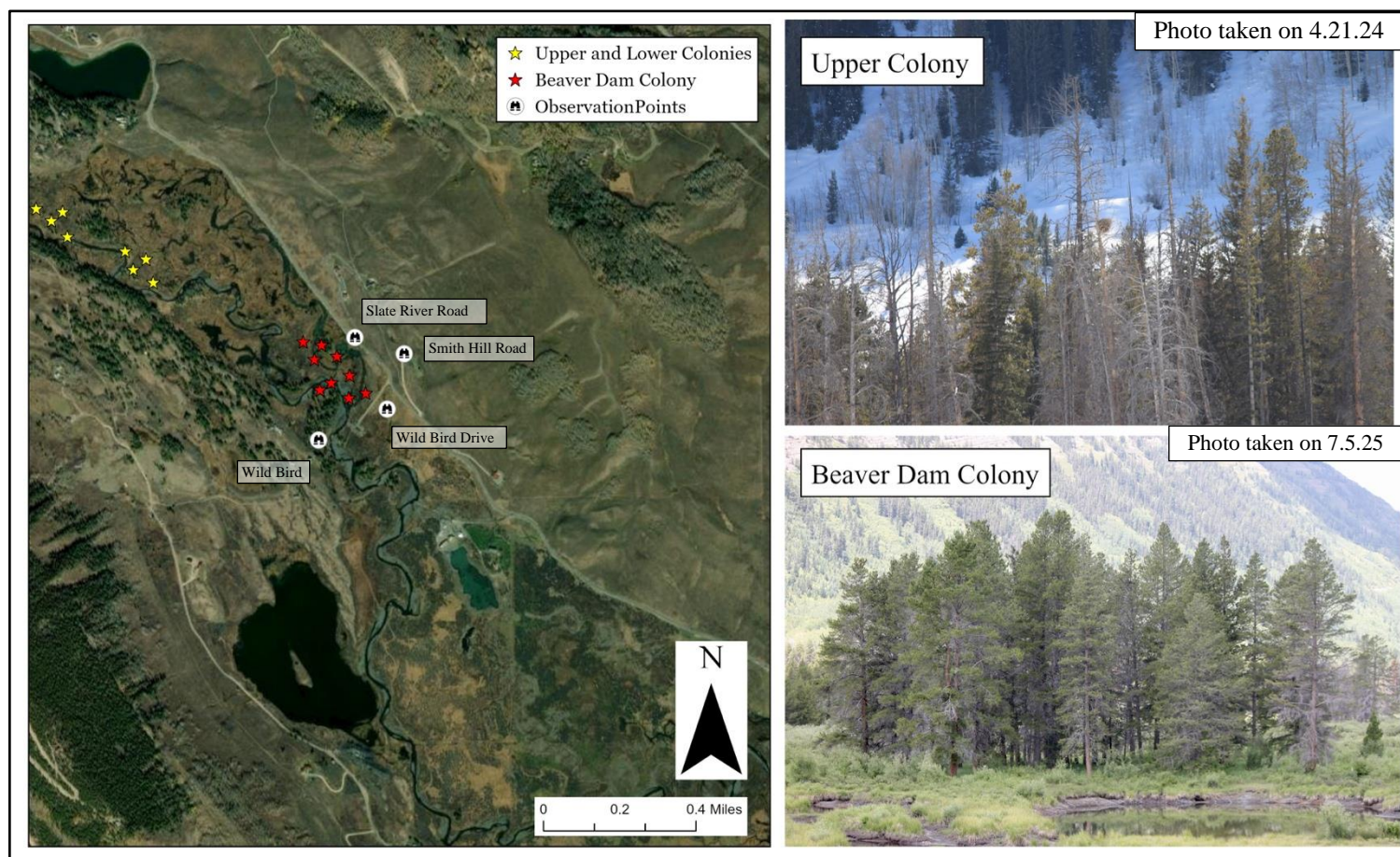


Figure 1. Slate River rookery depicting the upper, lower, and beaver dam colonies. Photos of the upper colony, and beaver dam colony are depicted on the right.

## Results

The season commenced with the first herons arriving at the colony on 24 March, and with the last fledging observed on 28 July, encompassing a total nest occupancy period of 126 days. Sixteen adults (eight

pairs) produced 22 fledged chicks, resulting in a mean brood size of  $3.1 \pm 0.6$  (Table 1). During the 2025 season, eight successful nests were recorded (Figure 2), resulting in 22 fledged chicks over the nest occupancy period. In the 2025 breeding season, both nest success and fledge success were calculated at 88%, with fledging success reaching 100%.

Table 1. Slate River Great Blue Heron colony demographic and phenological comparison among years 2018-2025.

Parameter	2018	2019	2020	2021	2022	2023	2024	2025
<b>Arrival</b>	March 13	March 17	March 13	March 7	March 13	March 23	March 22	March 24
<b>Egg Laying + Incubation</b>	April 19	April 12	April 3	?	April 2+	?	?	?
<b>Hatching + Broods</b>	May 7	May 10	May 1	?	May 19	June 7	May 12	May 18
<b>First Fledge</b>	July 3	July 7	July 2	July 1-5	July 8	July 27	June 26	July 6
<b>Last Fledge</b>	August 15	Sep 2	August 12	July 14-18	August 29	August 12	August 8	July 28
<b>Nest Occupancy (days)</b>	155	170	151	130	169	142	139	126
<b>Active Nests</b>	25	20	18	16	18	15	12	8
<b>Nests Fledging Young</b>	25	19	17	15	14	10	12	7
<b>Total Adults</b>	50	38	34	32	36	30?	24	16
<b>Total Chicks</b>	67	47	45	46	42	29	41	22
<b>Fledged Chicks</b>	67	41	43	42	39-40	29	41	22
<b>Mean Brood Size</b>	$2.7 \pm 1.2$	$2.5 \pm 1.0$	$2.7 \pm 0.9$	$2.9 \pm 0.23$	$2.8 \pm 0.8$	$2.9 \pm 1.2$	$3.4 \pm 1.0$	$3.1 \pm 0.6$
<b>Brood Size Range</b>	1-5	1-4	1-4	1-5	1-4	1-5	2-5	2-4

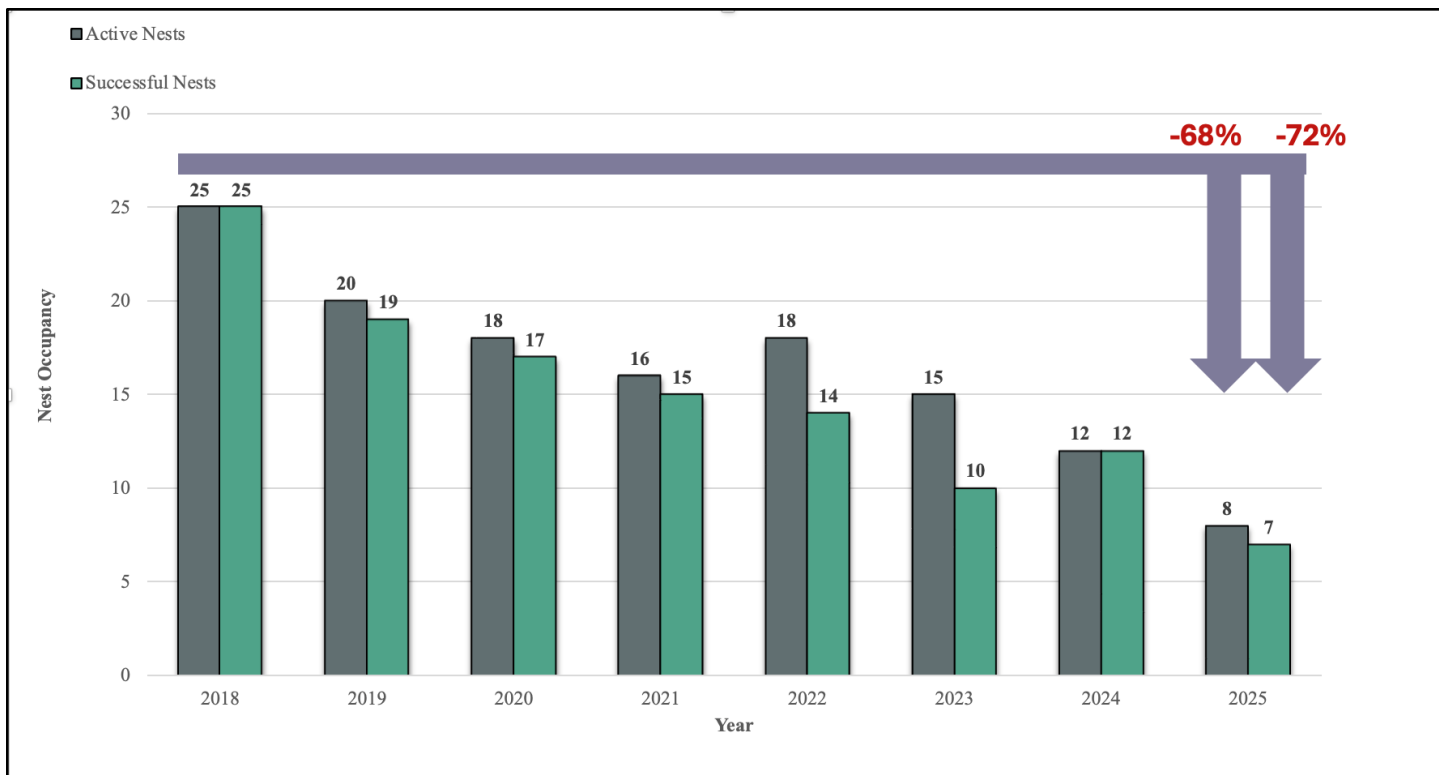


Figure 2. Slate River Great Blue Heron colony nest occupancy and nest success (defined as the number of nests that successfully hatched at least one chick) from 2018-2025.

The rookery had 16 adults (8 pairs). The first adult arrived at the rookery on 24 March and occupied Nest 20 (this nest was present in the 2024 season and reoccupied in 2025). The pair was established on 2 April, with incubation commencing on 29 April. This pair was last observed on 18 July (Figure 3). The last adult arrived at the rookery on 20 April at Nest 16. A pair formed on 24 April, and incubation began on 29 April. This pair was last observed on 21 June (Figure 3). Notably, the only recorded copulation during the 2025 season occurred on 13 April in Nest 17 (Figure 3). The herons in Nest 15 initiated a nest (include dates) and apparently produced eggs and incubated, but they failed to produce any chicks (failed nest).

Nest 16 produced two successfully fledged chicks, while Nests 14, 17, 20, and 23 each produced three fledged chicks. Nests 13 and 19 each yielded four successfully fledged chicks (Figure 4). The earliest hatching occurred on May 18th in Nest 13, with the chick fledging on 10 July. The latest hatchlings emerged on 30 May in Nests 14 and 23, fledging on 19 July (Figure 4).

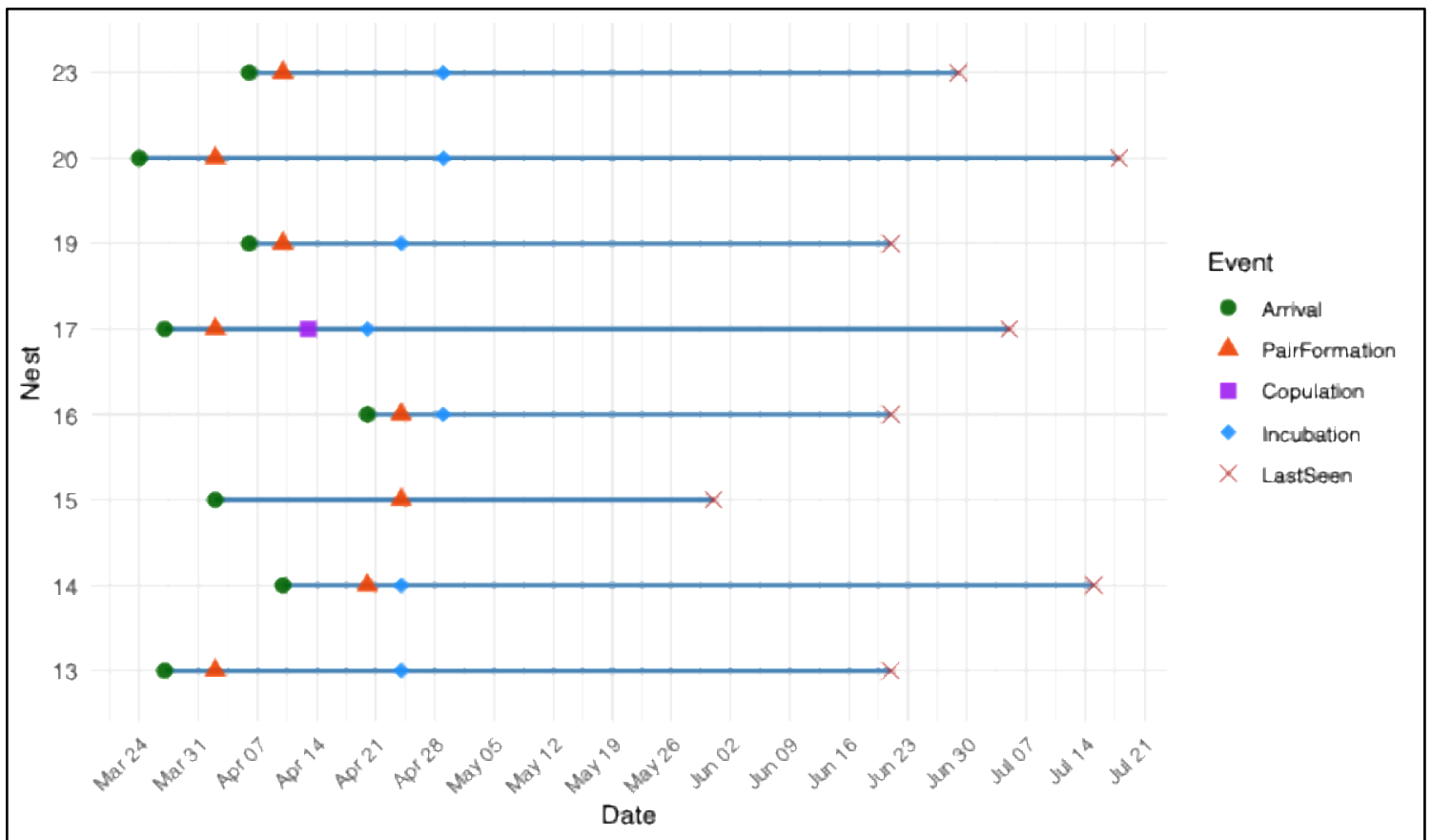


Figure 3. Phenology of Slate River Great Blue Heron adults' arrival, pair formation, copulation, incubation, and date of last seen.

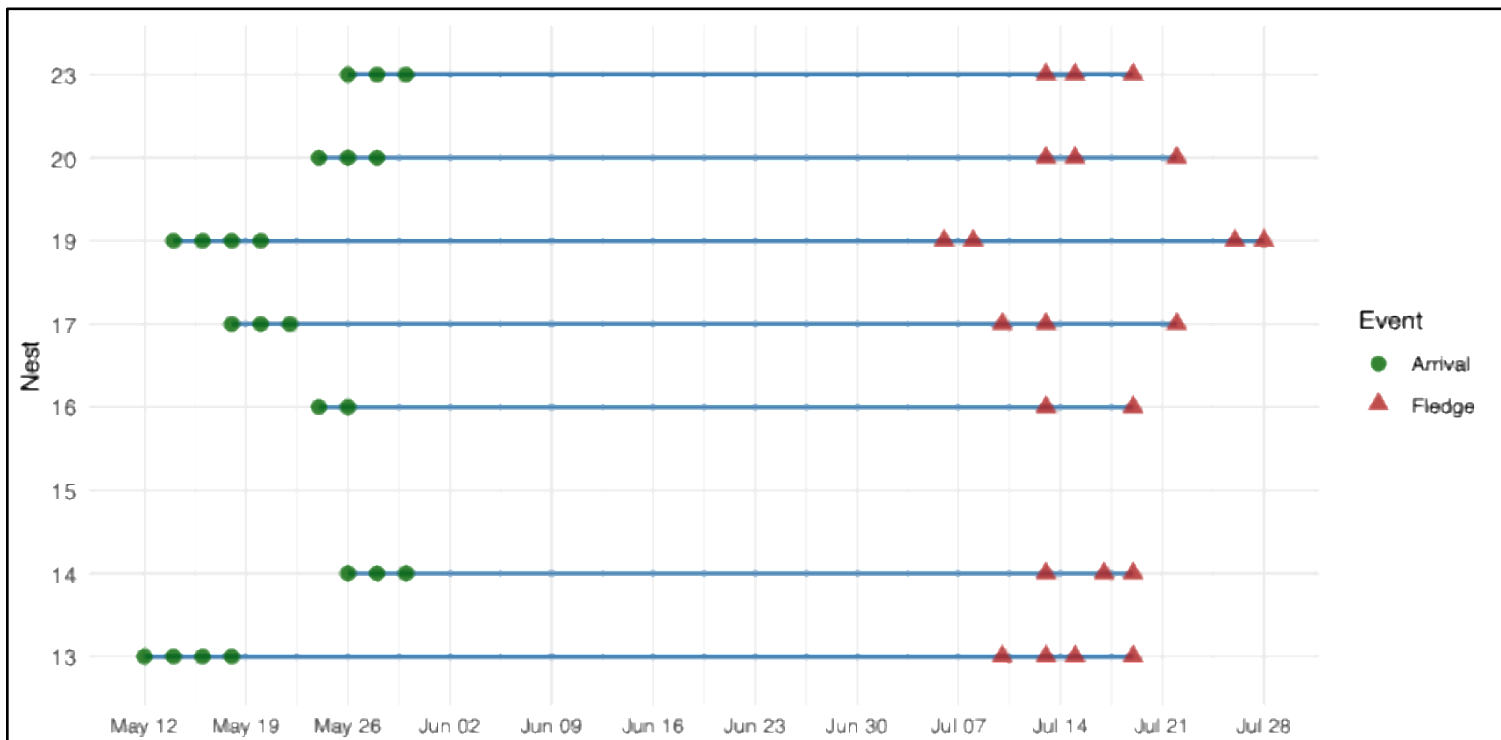


Figure 4. Phenology of Slate River Great Blue Heron's chicks' hatch and fledge dates. The number of circles or triangles is equivalent to the number of chicks.



Between 10 March and 28 July 2025, a total of 1,005 instances of anthropogenic disturbance were recorded across 34 sampling events, each lasting between 2 to 4 hours (Table 2). This equates to an average of approximately 13.4 disturbance events per hour in the vicinity of the Slate River heron colony. Of these disturbances, 79.6% were attributed to cars, while bikers accounted for 17.9% (Table 2). The remaining 2.5% consisted of motorcyclists, dogs, runners/hikers, and construction activity. It is important to note that disturbance data were not collected during approximately 25% of the sampling events due to various unforeseen circumstances. No human activities on the Slate River were observed during heron colony observations, however, Lily Frost, an undergraduate student at Colorado College, observed two events including anglers at the Beaver Dam colony and a family throwing a ball to their dog into the beaver pond below the colony. Our research team only observed one fisherman in the 8 years of the study, but resident of Wildbird, Tim Szurgot, said he has seen several fishermen over the years.

Table 2. The number of human activities and percent of overall activities in the vicinity of the Great Blue Heron colony in the Slate River valley. Data from 34 1-4-hour surveys from 10 March to 28 July 2025.

Type of Activity	Number of Occurrences	Number of Occurrences per hour	Percent of Occurrences
Cars	800	10.63	79.6%
Bikers	179	2.38	17.9%
Motorcyclists	2	0.03	0.2%
Dogs	2	0.03	0.2%
Runners/Hikers	20	0.27	1.99%
Construction near Rookery	2	0.03	0.2%
River Recreation	0	0	0
Total	1,005	13.37	~100%

Avian abundance at the Slate River Rookery, excluding Great Blue Herons, peaked on 8 June (Figure 5). Over the course of the rookery season, 11 avian orders were documented, with Passeriformes being the most frequently observed (Figure 5). A total of 53 bird species, including Great Blue Herons, were recorded at the site. The Song Sparrow (*Melospiza melodia*) was the most consistently observed species, present during 28 survey visits, followed by the Northern Flicker (*Colaptes auratus*) and the Red-winged Blackbird (*Agelaius phoeniceus*), each observed on 22 occasions (Figure 6). Sixteen species were recorded only once throughout the season, indicating a mix of resident and transient species using the rookery habitat.

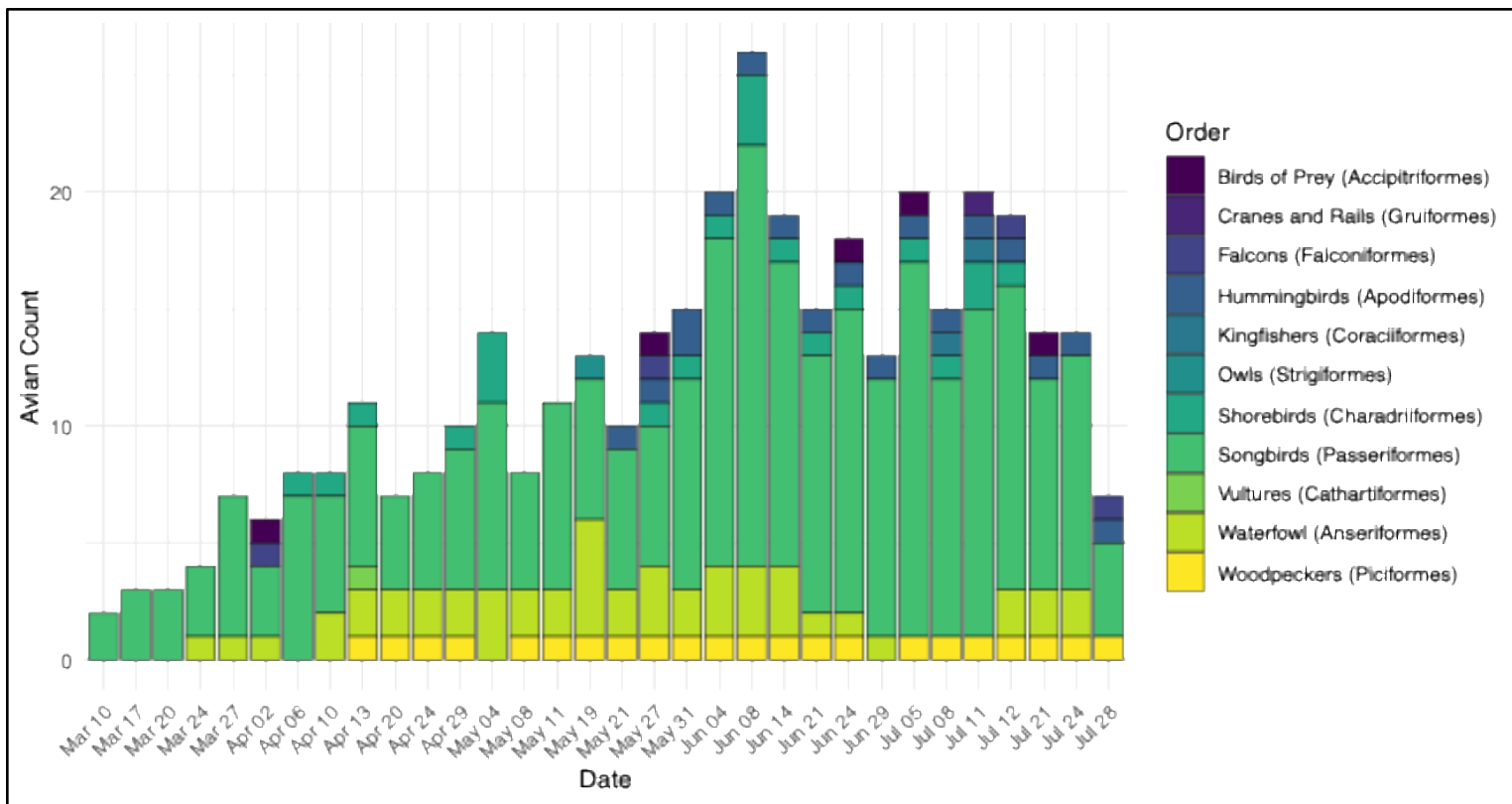


Figure 5. Avian order diversity at the Slate River Rookery excluding the Great Blue Herons.

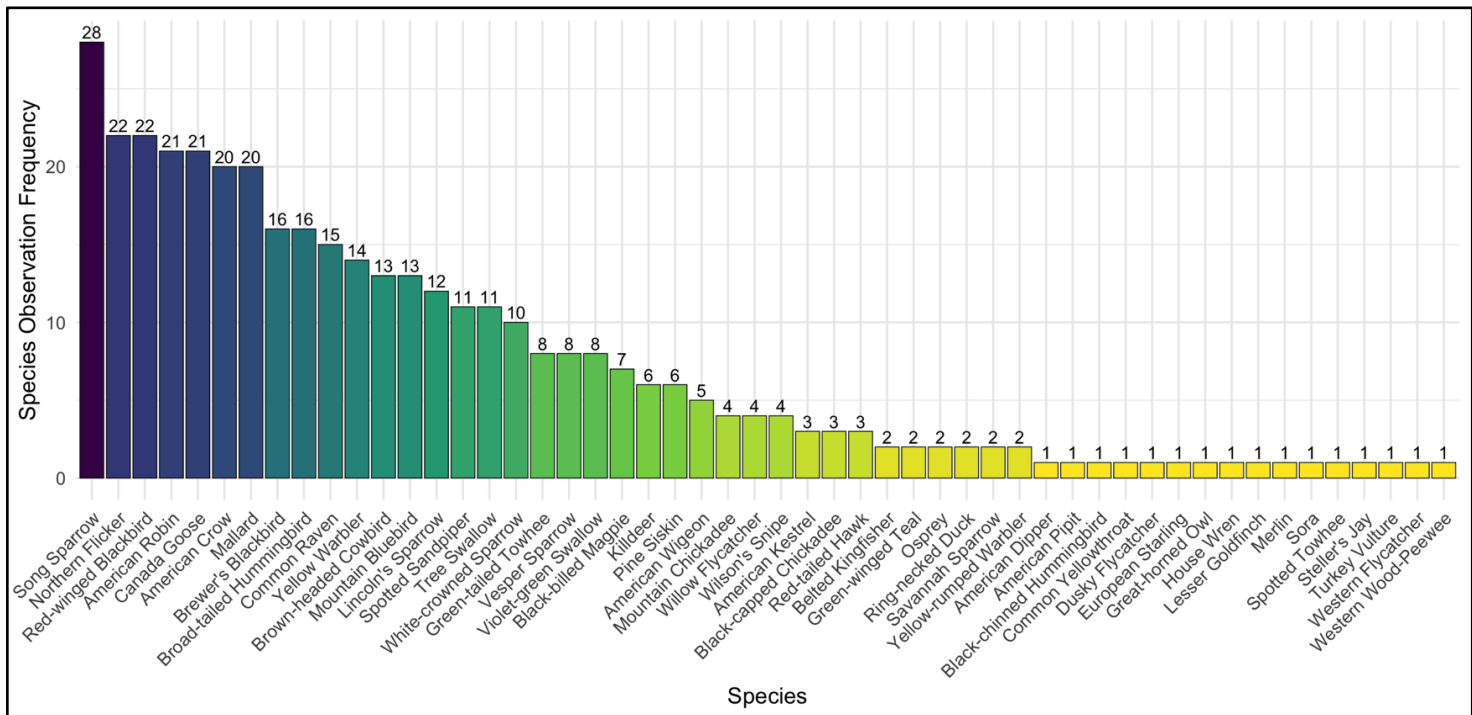


Figure 6. Frequency of species observations depicting 52 species seen at the rookery during the 2025 season.

Average discharge, measured in cubic feet per second (cfs), at the Slate River Above Baxter Gulch @Highway 135 near Crested Butte, CO gauge peaked near 1 June at just under 800 cfs (Figure 7). The lowest average discharge during the observation period occurred around 1 August, dropping to just below 20 cfs (Figure 7). These data are provisional and subject to revision pending approval by the United States Geological Survey



(USGS). Notably, the stream discharge dropped to 100 cfs on July 1<sup>st</sup>. This marks the typical end to the floating season as the water level dropped to low for safe and navigable floating.

Temperature, measured in degrees Celsius (°C), at the Slate River Above Baxter Gulch @Highway 135 near Crested Butte, CO gauge peaked in mid-July at just under 20°C (Figure 8). The lowest recorded temperature occurred at the beginning of May, dropping to just below 4°C (Figure 8). These data are provisional and subject to revision pending approval by the United States Geological Survey (USGS).

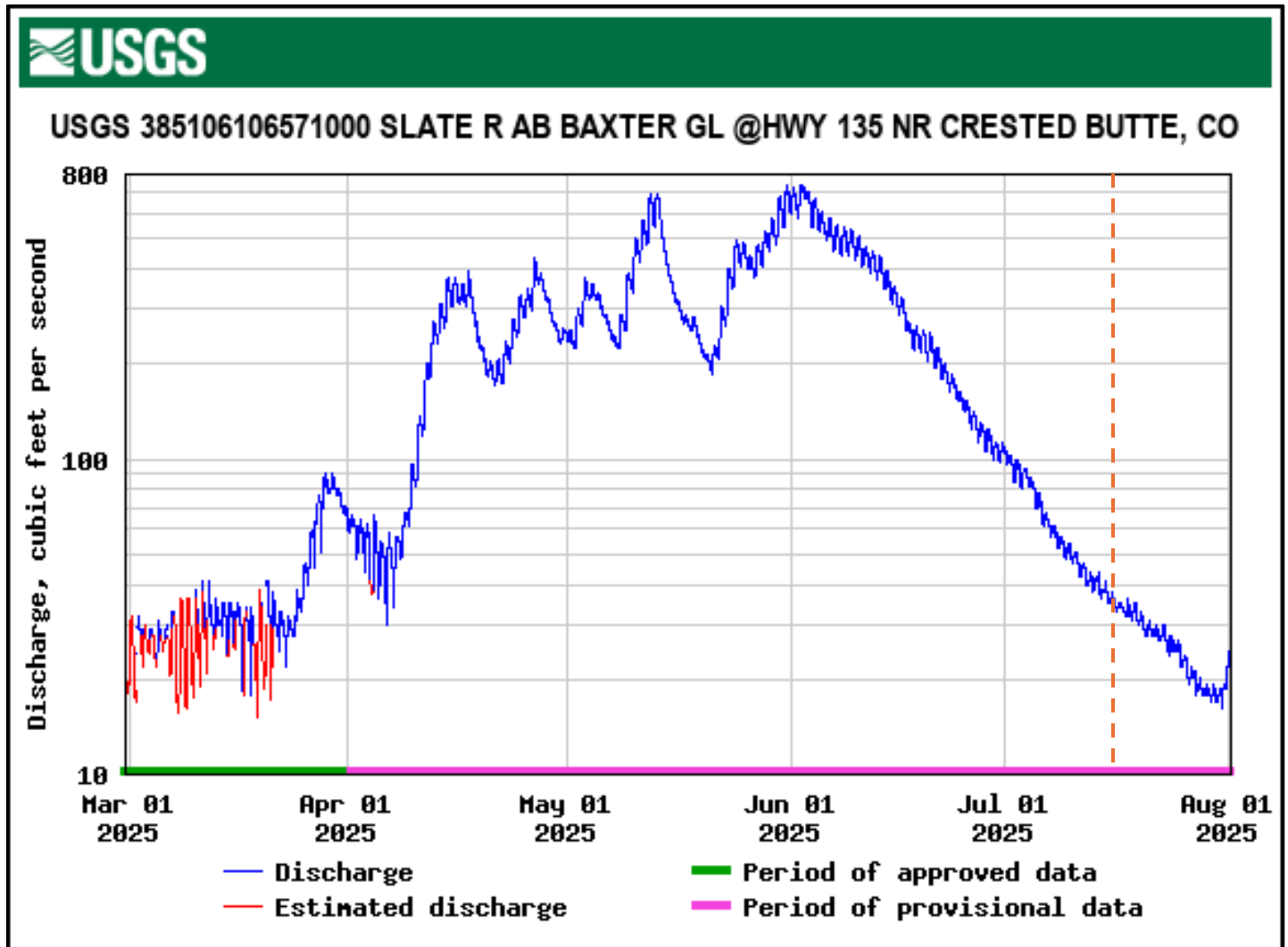


Figure 7. Slate River discharge measured in cubic feet per second (cfs). Data obtained from the USGS stream gauge: Slate River above Baxter Gulch at Highway 135 Near Crested, Butte, CO. The orange dashed line marks the end of the voluntary no float period on 15 July.

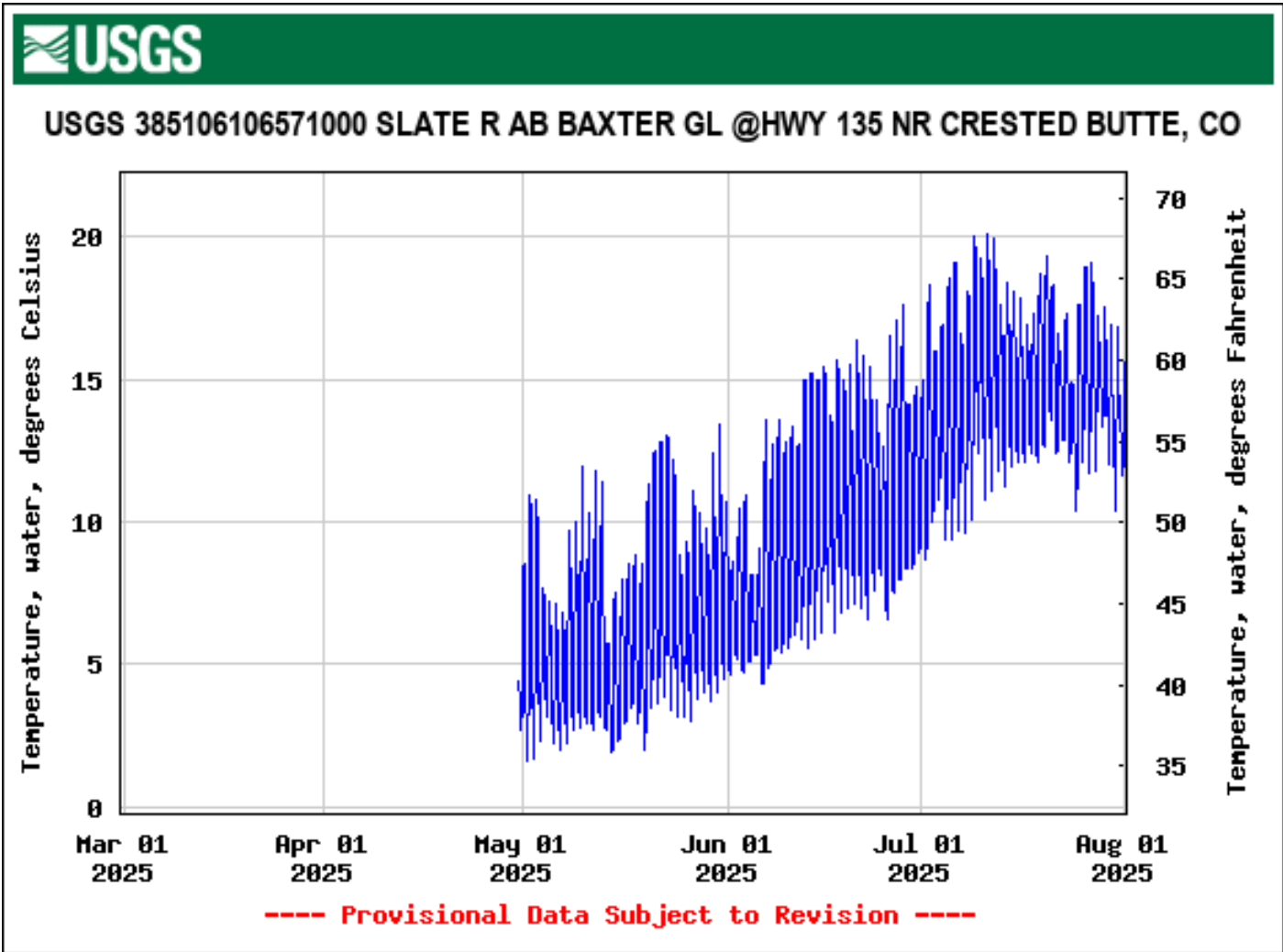


Figure 8. Slate River temperature measured in degrees Celsius. Data obtained from the USGS stream gauge: Slate River above Baxter Gulch at Highway 135 Near Crested, Butte, CO.

**Discussion**

The 2025 breeding season at the Slate River Great Blue Heron rookery exhibited notable trends that exemplify the ongoing challenges and ecological dynamics traditionally faced by Great Blue Herons. Most significantly, this season marked the latest recorded date of initial adult arrival (March 24) since the 8-year study began, which may reflect a combination of climatic, hydrological, and behavioral factors.

One plausible explanation for this delayed arrival is the extended presence of river ice observed in early spring, which likely influenced foraging accessibility and nest formation. Herons rely on open water and accessible wetland habitat to forage efficiently (Dowd et al., 1985; Gibbs, 1991; Carlson et al., 1996; Cavitt et al., 2014). Prolonged ice cover, potentially related to a delayed spring thaw, could have restricted early-season food availability and discouraged earlier nest recruitment. The influence of hydrologic conditions on rookery dynamics is further supported by stream gauge data, which recorded a peak average discharge of just under 800 cfs around 1 June. This peak coincided with critical chick-rearing stages, potentially impacting foraging success and nest-site conditions.

Despite the later start, reproductive success was high at the nest scale. The overall nest success rate was 88%, and fledging success reached 100%. Although we had 8 active nests, only 7 of those nests successfully produced fledged chicks (22 in total). This is a huge decline from 2018 where the rookery produced 67 chicks (Table 1). If this concerning trend continues, the future of the Slate River rookery is uncertain. Although there was a notable decline in active nests, the demographics indicate a resilient colony capable of adapting to compressed seasonal windows. The earliest hatch was observed on 18 May, with fledging continuing through July 28. This spread is consistent with asynchronous nesting strategies seen in other heron colonies, where staggered timing may be the result of environmental variability (Carlson et al., 1996; Henry et al., 1978). However, the nest occupancy period of the 2025 season (126 days) is the shortest nest occupancy period since this study began (Table 1). This warrants some attention, and could be due to a multitude of environmental variables such as weather, disturbance, tree decay, etc. Additionally, the abandonment of Nest 15, the only nest to produce no chicks, is something to note. While the cause of failure was not directly observed, it may be linked to factors such as individual inexperience, predation, or early-season disturbance, such as the delayed ice-thaw. When the Slate River mostly melted out in May, water temperature patterns exhibited a typical seasonal rise, peaking near 20°C in mid-July, and also potentially played a role in chick development and fledging timing.

Avian diversity at the rookery was high throughout the season, with 11 avian orders and 52 species recorded in total. The presence of both resident and migratory species shows that the Slate River is more than just a breeding site for Great Blue Herons, but rather a key habitat that supports a wide range of wildlife year-round (Royen et al., 2013; Palmer & Ruhi, 2019). The peak in avian abundance on 8 June, coinciding with nesting stages, suggests potential ecological overlap. The consistent presence of resident Passeriformes such as Song Sparrows, Northern Flickers, and Red-winged Blackbirds further emphasizes the site's value as a diverse ecosystem (Royen et al., 2013; Palmer & Ruhi, 2019).

Human activity along the Slate River ecosystem seems to be a concern, but this is merely an observation. The increased recreational use of the river and adjacent trails likely contributes to a cumulative stress environment for breeding herons. While historically, the herons occupied different colonies of trees, they have moved closer to Slate River Road over the past couple seasons, potentially due to the increase in recreational use. Previous studies have shown that unpredictable human disturbance, particularly during nest initiation and brooding, can lead to an interference in chick-rearing or colony abandonment (Vennesland, 2010; Azerrad, 2012). Anthropogenic disturbance data revealed an average of approximately 13.7 activity occurrences per hour, with most disturbances attributed to vehicular traffic. This aligns with the location of the rookery observation points, which are situated along Slate River Road, a relatively busy thoroughfare during the summer due to recreational access beyond the rookery. Two notable, less common disturbances were documented during the season. On 8 June, a fisherman was observed in the river in close proximity to the Beaver Dam Colony. On 18 July, Lilly Frost reported a boy playing fetch with his dog directly beneath the heron trees. Both incidents presented opportunities for public engagement and education about the Slate River conservation model.

Perhaps a relevant disturbance of the 2025 season was the series of wildfires on the South Rim of Black Canyon of the Gunnison National Park. On 10 July, lightning strikes in Montrose, Colorado ignited fires on both the South and North Rims of the park. In response, the National Park Service closed the park and evacuated staff. The North Rim reopened on 30 July, followed by the South Rim on 18 August. These fires contributed to a cascade of ecological impacts, as wildfire smoke drifted through the valley and settled over the rookery for

several days. The persistent haze likely altered visibility and air quality in the area, creating a stressful environment for both nesting birds and other local wildlife. Prolonged exposure to smoke has been shown to affect wildlife behavior, including changes in foraging patterns, vocal communication, and respiratory health (Sanderfoot et al., 2021; Garces & Pires, 2023). While the specific impacts on the Slate River herons remain unclear, the timing of the fires overlapped with critical stages of the breeding season, potentially increasing stress on the colony.

An additional consideration for long-term rookery viability is the condition of nesting material, particularly the health and structural integrity of the trees used for colony formation. In previous years, Great Blue Herons utilized two sub-colonies (upper and lower) upriver from the current colony location along the Slate River, but these sites were abandoned. Nest building adult herons still visit these two colonies to gather sticks for nest construction and maintenance. One likely contributing factor is tree decay, which can result from prolonged avian nesting activity. Large, colonial birds like herons can contribute to tree degradation through repeated guano deposition, and limb breakage, ultimately compromising the trees' ability to support the colony (Kazantzidis et al., 2013; Julin, 1986). The current concentration of colonial activity in the Beaver Dam colony raises concerns about the future decay process of those nesting trees, although no significant changes in tree health were observed during the 2025 rookery season.

The findings from the 2025 rookery season highlight both the resilience and vulnerability of the Slate River heron rookery. While the colony demonstrated strong reproductive success at the “nest scale” despite a delayed start, the future residence of great blue herons in the Slate River valley is uncertain. The eight-year declining trend in nest occupancy resulted in a total of only 8 occupied nests in 2025 and 7 successful nests. While no one knows how long the colony has been present in Crested butte, it has persisted for close to 30 years at least. Current and future conditions in the valley such as climate variability, hydrologic flows, and increased recreational use remain topics of concern. Continued monitoring of arrival timing, nest success, and hydrological patterns are essential to support the long-term viability of this rookery. The efforts of the Slate River Working Group provide a model for community-based conservation. Adaptive management strategies, such as voluntary “no-floats”, seasonal buffer zones, and targeted public education, have helped minimize conflict between recreation use and conservation needs.

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## Appendix 1. Raw Data

Table A1. Daily heron nesting activity at the Slate River Great Blue Heron Colony in 2025. For observation point, SRR = Slate River Road, SHR = Smith Hill Road, WBD = Wildbird Drive, and WBT = Wild Bird.

Date	Number of Active Nests	Number of Adult Herons	Number of Heron Chicks	Observation Points
3/10/25	0	0	0	SRR, WBT, WBD, SHR
3/17/25	0	0	0	SRR, WBT, WBD, SHR
3/20/25	0	0	0	SRR, WBT, WBD, SHR
3/24/25	2	3	0	SRR, WBT, WBD, SHR
3/27/25	3	5	0	SRR, WBT, WBD, SHR
4/2/25	4	7	0	SRR, WBT, WBD, SHR
4/6/25	6	10	0	SRR, WBD
4/10/25	7	12	0	SRR, WBD
4/13/25	7	13	0	SRR, WBT, WBD, SHR
4/20/25	7	13	0	SRR, WBT, WBD, SHR
4/24/25	8	15	0	SRR, WBT, WBD, SHR
4/29/25	8	15	0	SRR, WBT, WBD, SHR
5/4/25	8	12	0	SRR, WBT, WBD, SHR
5/8/25	8	13	0	SRR, WBT, WBD, SHR
5/11/25	8	13	0	SRR, SHR
5/19/25	8	12	4	SRR, SHR
5/21/25	8	15	10	SRR, WBT, WBD, SHR
5/27/25	8	15	16	SRR, WBT, WBD, SHR
5/31/25	7	9	22	SRR, WBT, WBD, SHR
6/4/25	7	8	22	SRR, WBT, WBD, SHR
6/8/25	7	7	22	SRR, WBT, WBD, SHR
6/14/25	7	9	22	SRR, WBT, WBD, SHR
6/21/25	7	3	22	SRR, SHR
6/24/25	7	3	22	SRR, SHR
6/29/25	7	2	22	SRR, WBT, WBD, SHR
7/5/25	7	2	22	SRR, WBT, WBD, SHR
7/8/25	7	2	20	SRR, WBT, WBD, SHR
7/11/25	7	1	18	SRR, WBT, WBD, SHR
7/12/25	7	1	18	SRR, WBD, SHR
7/15/25	7	1	9	SRR, WBD
7/18/25	7	1-2	8	SRR, WBD, SHR
7/21/25	3	1	4	SRR, WBT, WBD, SHR
7/24/25	1	1	2	SRR, WBT, WBD, SHR
7/28/25	0	1	0	SRR, WBD, SHR

**Appendix 2. 2025 Rookery Photos**



Appendix Figure 1. Heron adult engaging in circle flight to attract a mate. 3.24.25.  
Photo taken by: Lucca Sterrer



Appendix Figure 2. Heron chick standing atop a Douglas Fir. 7.15.25.  
Photo taken by: Bridget Goddard





Appendix Figure 3. Adult heron with chick in Nest. 6.29.25

Photo taken by: Lucca Sterrer



Appendix Figure 4. Heron chicks standing at attention waiting for food delivery. 7.11.25

Photo taken by: Lucca Sterrer



Appendix Figure 5. Adult heron standing above nest. 6.8.25

Photo taken by: Lucca Sterrer



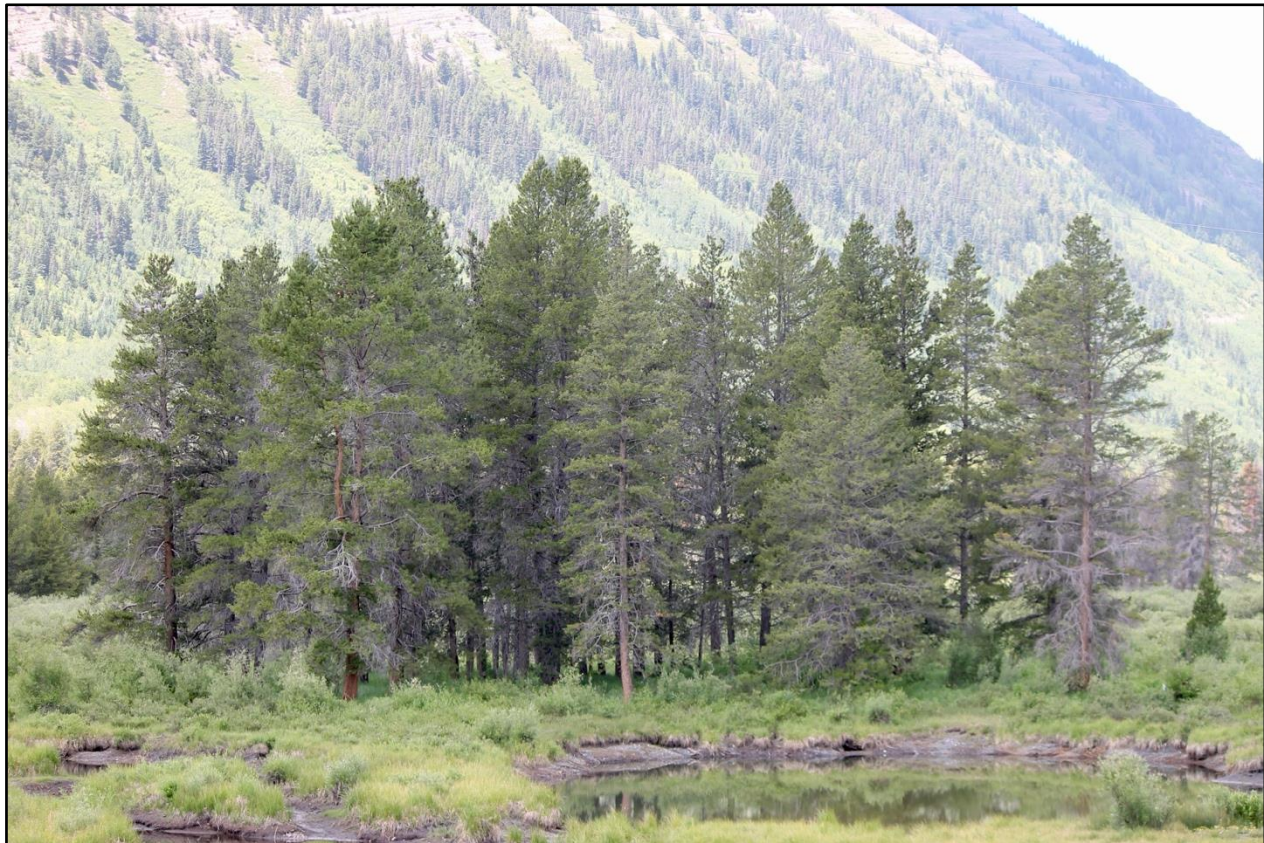
Appendix Figure 6. Adult heron and chicks in Nest. 6.1.25

Photo taken by: Lucca Sterrer





Appendix Figure 7. Beaver Dam Colony trees. 6.3.25  
Photo taken by: Lucca Sterrer



Appendix Figure 8. Beaver Dam Colony trees. 7.5.25  
Photo taken by: Lucca Sterrer





Appendix Figure 9. Scarlet Gilia (*Ipomopsis aggregate*). 6.29.25  
Photo taken by: Lucca Sterrer



Appendix Figure 10. Snow Pillow atop a nest. 3.10.25  
Photo taken by: Lucca Sterrer



Appendix Figure 11. Beaver swimming at rookery. 6.14.25  
Photo taken by: Lucca Sterrer



Appendix Figure 12. Merlin (*Falco columbarius*) at rookery. 4.5.25  
Photo taken by: Lucca Sterrer



Appendix Figure 13. Heron with stick preparing to maintain nest. 6.3.25  
Photo taken by: Lucca Sterrer