Caspian Tern Deterrence at Potholes Reservoir: 2025 Annual Report for Bureau of Reclamation

United States Department of Agriculture
Animal and Plant Health Inspection Service
Wildlife Services

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Background

In 2012, approximately 475 Caspian tern (*Hydroprogne caspia,* CATE) breeding pairs were observed on Goose Island and were estimated to be consuming between 180,000 to 200,000 juvenile salmon per year (USACE 2014). The Bureau of Reclamation (BOR) has since implemented a dissuasion program to reduce or eliminate CATE nesting success on Goose Island and throughout the Potholes Reservoir, features of the Columbia Basin Project, under the Inland Avian Predation Management Plan (IAPMP, USACE 2014). In 2020, United States Department of Agriculture Wildlife Services (USDA-WS) began assisting BOR with the implementation of CATE dissuasion efforts on Potholes Reservoir for the protection of ESA-listed salmonids in the Columbia River Basin.

Passive Dissuasion Efforts

The polyurethane rope and caution tape flagging system used during the 2020 season required nearly weekly maintenance. In 2021, flagging was updated from polyurethane rope to stainless steel cables and vinyl fladry (Figure 1), reducing maintenance after high-wind events. In 2022, USDA-WS began tracking fladry maintenance. In 2023, heavier gauge cables and wire clips were deployed on high wind surfaces (Figure 2), resulting in only one day of maintenance during the remainder of 2023. In 2025, 3 visits were needed to reinstall the fladry at the onset of the season (24, 25, and 26 of March). Additional fladry was added to Center Island as a result of early nesting activity on May 9, 2025. There were no repairs needed in 2025. This new fladry system reduced litter, disturbance to nesting birds, and labor costs compared to the previous systems.

Figure 1. Updated stainless steel cables and vinyl fladry, Potholes Reservoir.

Figure 2. Heavier gauge cable and fladry attachments, Potholes Reservoir (2023).

USDA-WS incorporated a coyote effigy to enhance CATE dissuasion (Figure 3) in 2022. This method was intermittently used in 2025. The effigy remained useful in deterring CATE nesting while not impacting other birds, which was the same in 2022, 2023, and 2024. The coyote effigy proved to be effective where flagging was impractical due to reduced employee coverage from the 2025 federal hiring freeze. The coyote effigy had no impact on other nesting bird species.

Figure 3. Coyote effigy placed on CATE nesting site.

Potholes Reservoir Results

Survey data was collected using ArcGIS Survey 123. Survey routes were collected using OnX mapping. Goose Island was surveyed via boat, and by foot to account for areas not visible by boat. Boat surveys were conducted by circling the island and stopping at various vantage points to conduct counts. Foot surveys were generally conducted once a week, from the highest point on Goose Island (Main Island Rocks region). The other islands within Potholes Reservoir were surveyed by boat or utility terrain vehicle (UTV).

USDA-WS made 20 visits to Goose Island and other regions of the Potholes Reservoir from 15 April through 8 August 2025 (Figure 4). Access declined within Potholes Reservoir as water levels decreased later into the CATE breeding season. When water levels dictated, USDA-WS incorporated a UTV to survey northern areas of the Potholes Reservoir.

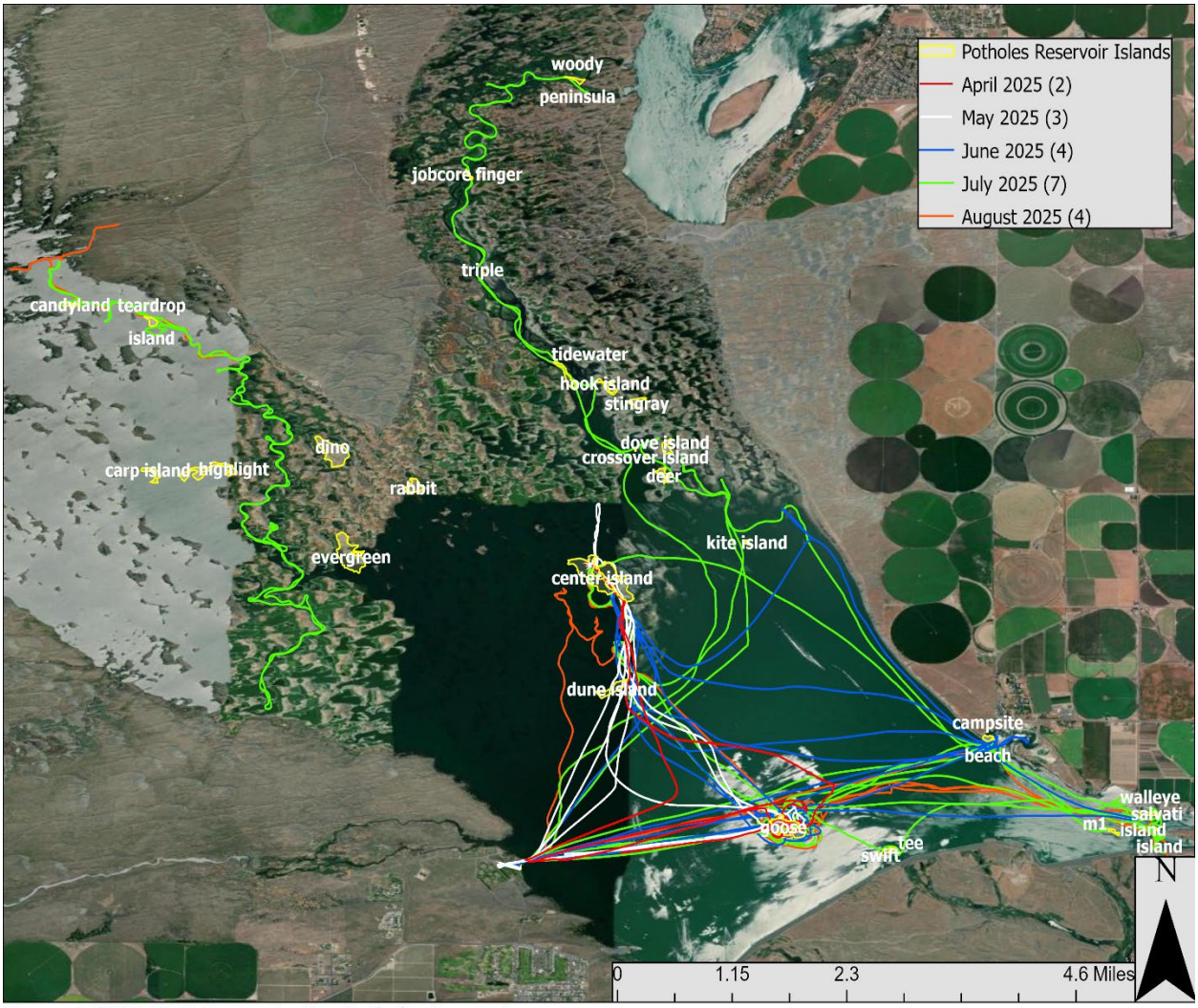

Figure 4. 2025 CATE Survey Routes, Potholes Reservoir.

USDA-WS counted 609 CATE over the season (compared to 395 in 2022, 430 in 2023, and 831 in 2024); 475 at Goose Island, 60 at Center Island, 26 at Evergreen Island, 23 at Hook Island, 16 at Dove Island, 8 at Campsite Beach, and 1 at Highlight Island (Figure 5). We suspect that an unidentifiable number of the 609 CATE were counted multiple times throughout the season, so this is not to be used as a population estimate. USDA-WS dispersed all surveyed CATE prior to departing the survey area. Center and Goose Islands were the only locations with active CATE nests in 2025.

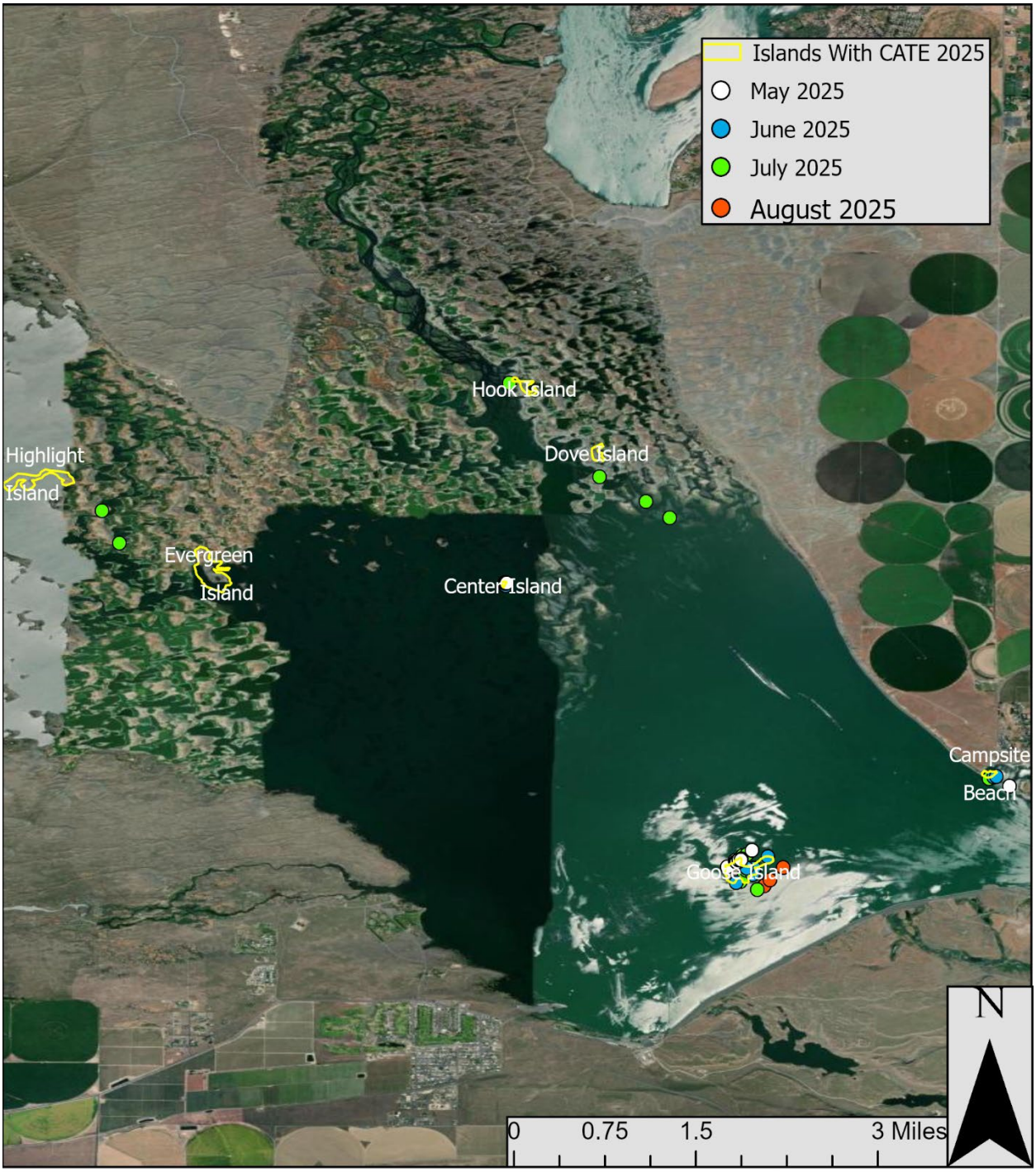

Figure 5. 2025 CATE Local Counts and Dispersal, Potholes Reservoir.

USDA-WS observed fewer than 50 CATE throughout Potholes Reservoir for 17 of the 20 days surveyed (Figure 6). The highest single count of CATE at one location was 77 birds at Goose Island on 29 July 2025. The highest single count on an island other than Goose Island was 42 CATE at Center Island on 9 May 2025. There were three survey days in 2025 where USDA-WS made no observations of CATE (15 April 2025, 30 April 2025, and 12 August 2025).

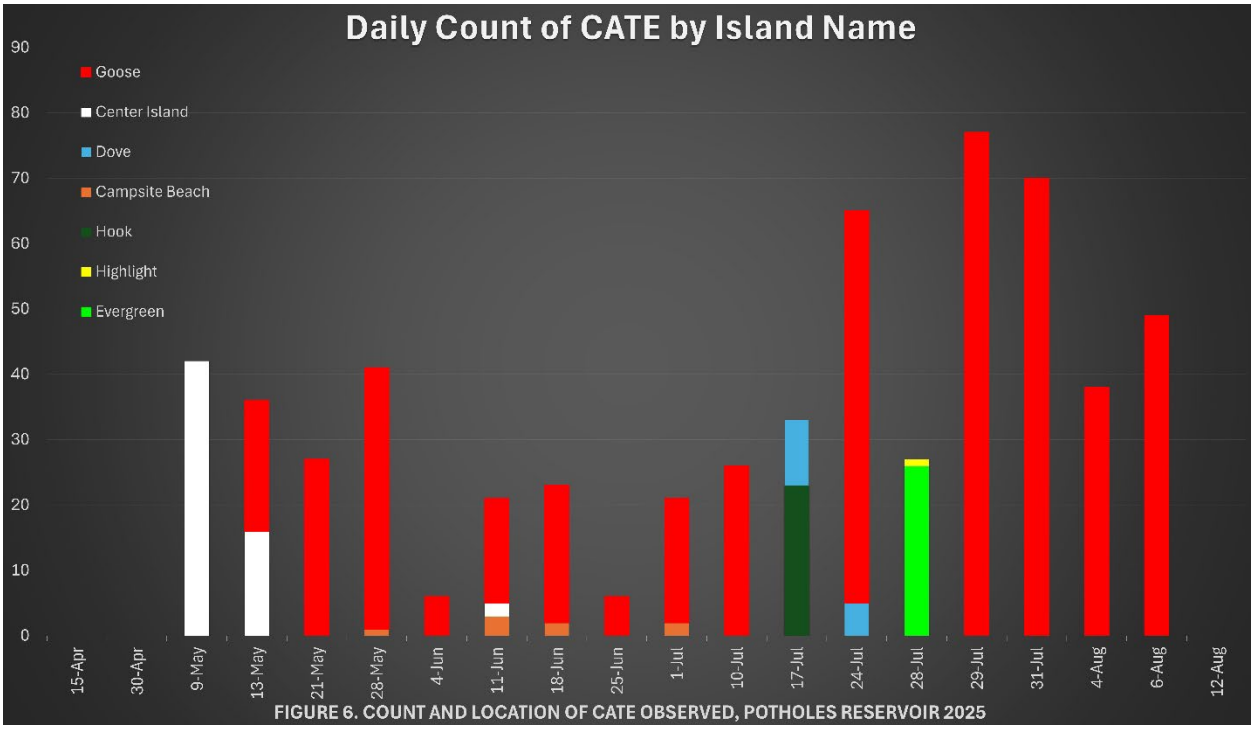

FIGURE 6. COUNT AND LOCATION OF CATE OBSERVED, POTHOLES RESERVOIR 2025

The first CATE observation was 42 CATE at Center Island on 9 May 2025. The first nesting attempt was recorded at Center Island on 9 May 2025. The last egg removal was at Goose Island on 24 July 2025 (Table 1).

Activity	2020	2021	2022	2023	2024	2025
First CATE Observed	13-Apr	5-Apr	15-Apr	24-Apr	2-Apr	9-May
First CATE Egg Removal	18-Apr	28-Apr	9-May	23-May	21-May	9-May
Last CATE Egg Removal	9-Jul	26-May	12-Jul	31-Jul	24-Jul	24-Jul

Table 1. Notable CATE Breeding Season Milestones, Potholes Reservoir 2020-2025

Potholes Reservoir CATE Nest and Egg Removal

USDA-WS observed 0 CATE chicks and took 189 CATE eggs (153 at Goose Island and 36 at Center Island) from 120 nests (85 at Goose Island and 35 at Center Island) in 2025 (Figure 7). The nesting attempt at Center Island (refer to figure 4 for location), discovered on 9 May 2025, was an incipient colony first observed by USDA-WS, 21 May 2024 which resulted in immediate removal of nests and eggs and installation of anti-nesting materials. With the return of the incipient CATE colony on 9 May 2025, USDA-WS removed all nests and eggs and installed fladry and a coyote effigy to deter future nesting attempts. There were zero attempts to nest on Center Island for the remainder of the 2025 season (Figure 8).

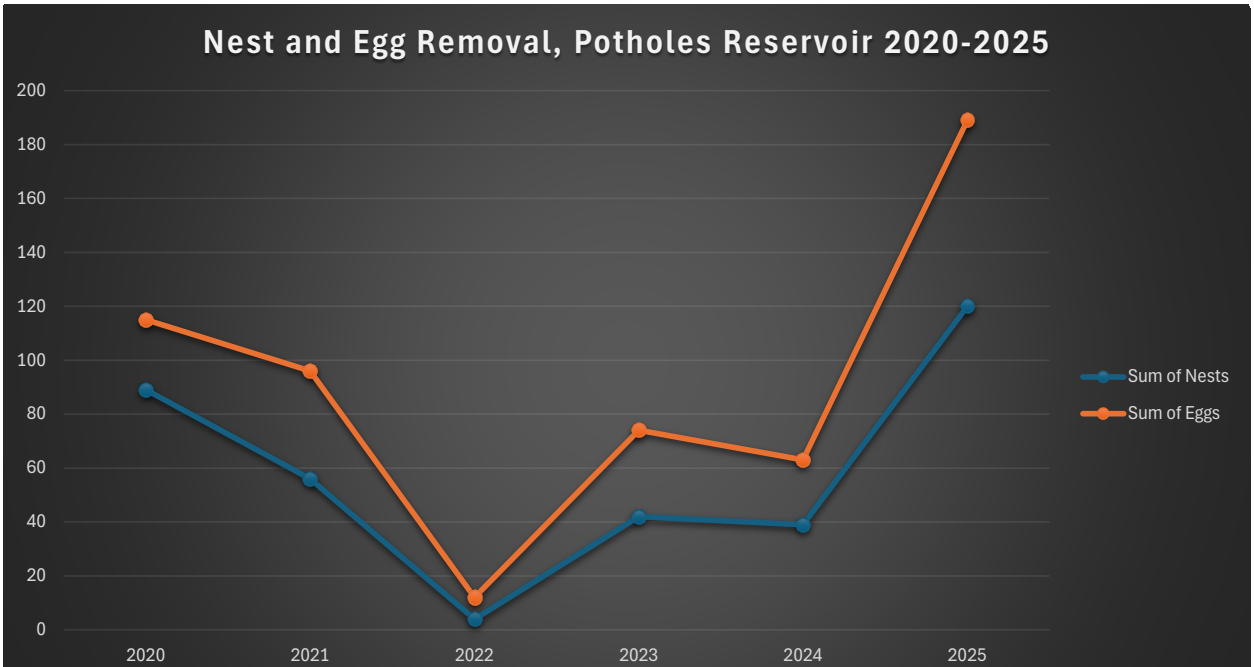

FIGURE 7. CATE NESTS AND EGG REMOVAL, POTHOLES RESERVOIR

Figure 8. USDA-WS Immediate install of fladry to deter future nesting attempts on Center Island, Potholes Reservoir 2025.

Most nesting activity on Potholes Reservoir in 2025 occurred during May and July, with a noticeable decline in June (Figure 9). In May, 98 CATE eggs were removed from 52 nests, while June saw only 12 eggs taken from nine nests. Nesting surged again in July, with 79 eggs

removed from 59 nests. To deter further nesting, a coyote effigy was placed near nesting sites, which effectively prevented additional nesting attempts in those areas. Despite the June lull, overall CATE egg removal was significantly higher in 2025 (Figure 7).

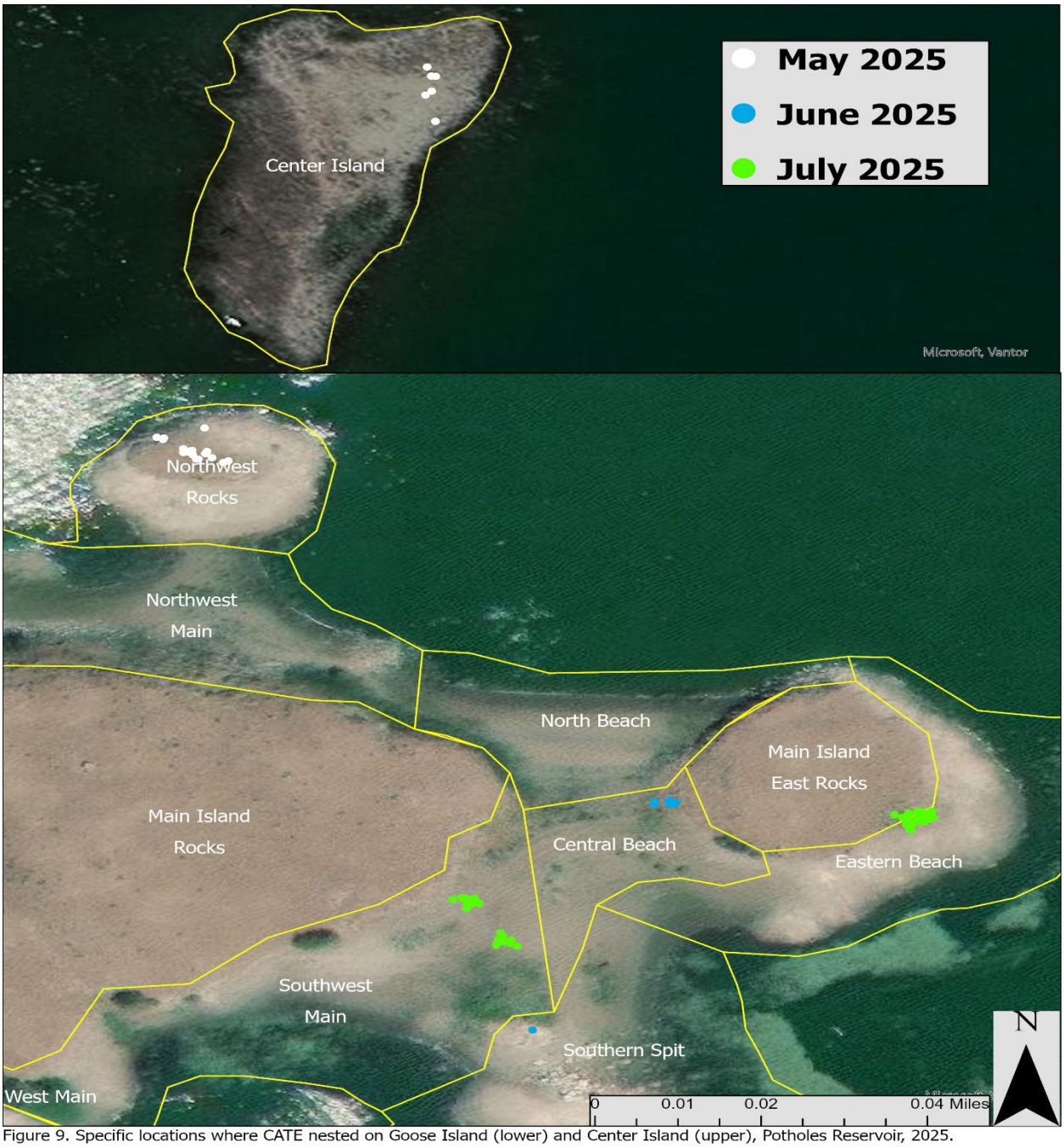

Figure 9. Specific locations where CATE nested on Goose Island (lower) and Center Island (upper), Potholes Reservoir, 2025.

USDA-WS documented the Potholes Reservoir water level (Figure 10), recorded via the BOR Hydromet website. The 2025 water level decline was consistent with the trend from previous years and exposed additional shoreline areas where CATE could nest. However, CATE did not appear to attempt to exploit these areas in June 2025, so no temporary fladry was added. In July

CATE began to nest in areas that were once covered by the water line on Goose Island. USDA-WS responded by placing coyote effigies in these areas to dissuade CATE from continued nesting attempts.

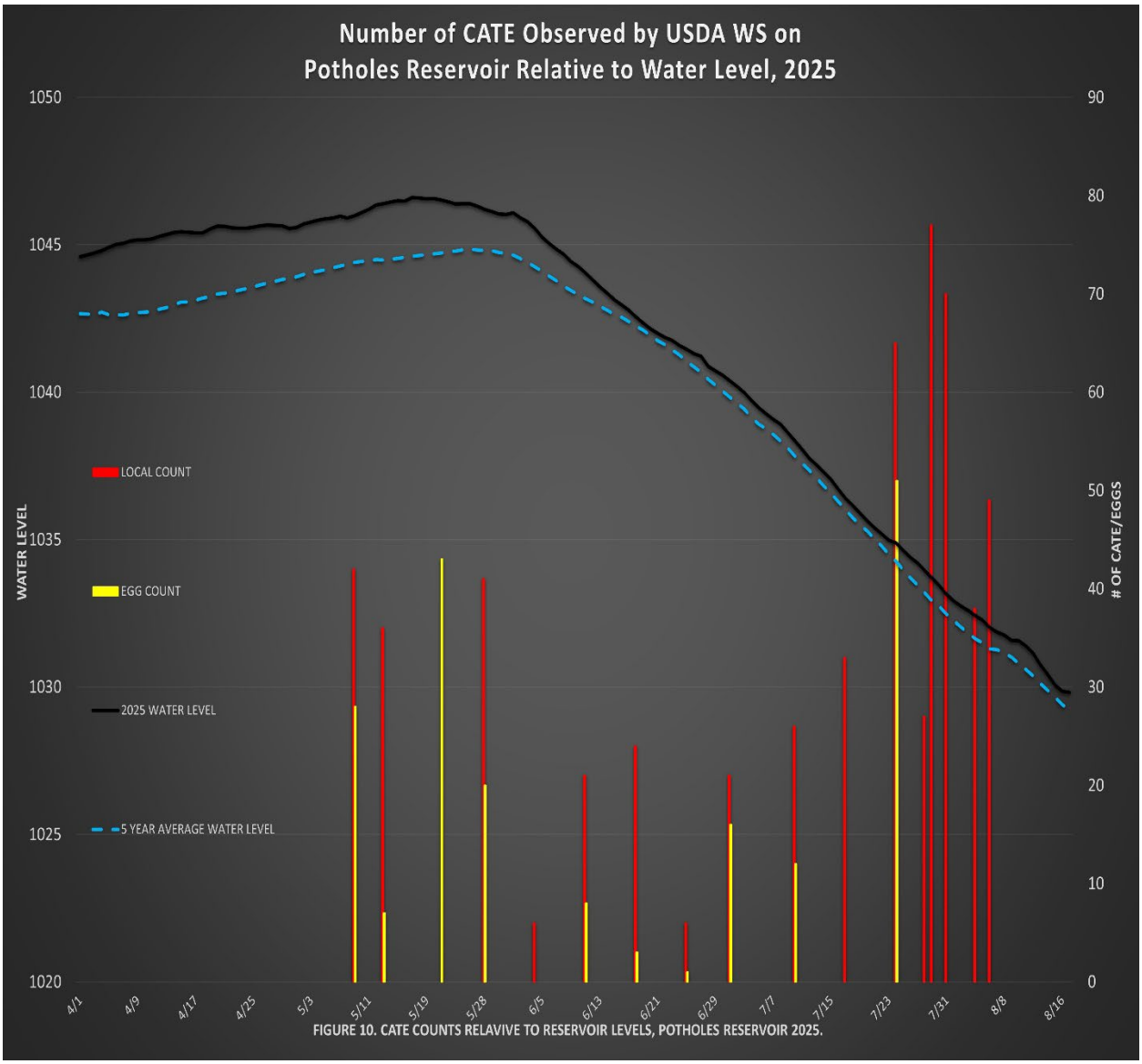

FIGURE 10. CATE COUNTS RELAVIVE TO RESERVOIR LEVELS, POTHOLES RESERVOIR 2025.

Banks Lake Survey Results

USDA-WS continued exploratory surveys[1] for CATE activity at Banks Lake. One survey was conducted 18 July 2025; 25 CATE were observed (Figure 11). It is unknown if any CATE eggs were laid or CATE chicks fledged in 2025.

[1] See Section 3.4 of the IAPMP's Adaptive Management Plan

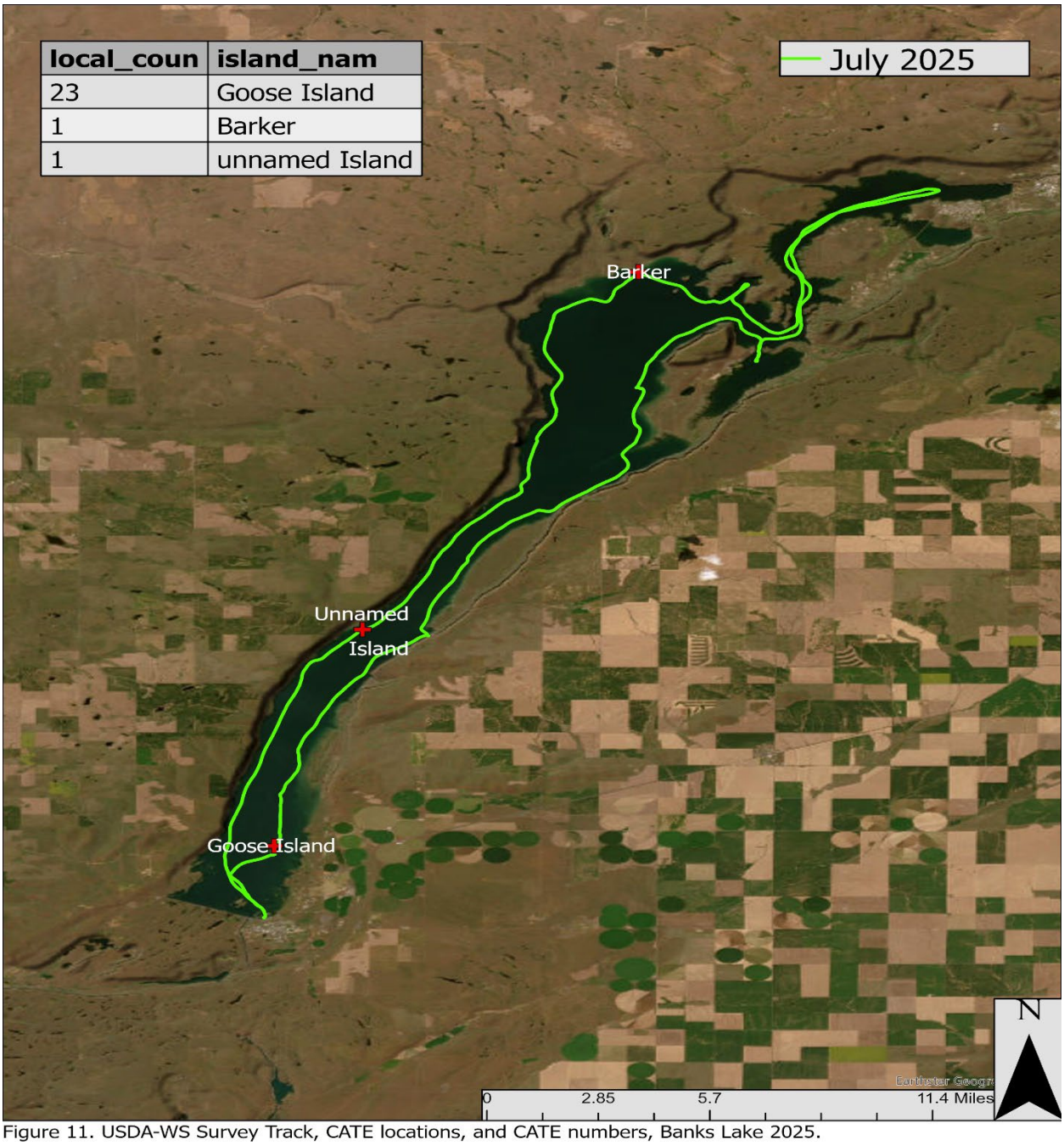

Figure 11. USDA-WS Survey Track, CATE locations, and CATE numbers, Banks Lake 2025.

Banks Lake Future Plans

USDA-WS may continue coordination, at BOR's request, with amendments or additional agreements to include survey and dissuasion (as necessary and appropriate under the Migratory Bird Treaty Act) at Banks Lake in future years.

Recommendations

Last year, USDA-WS suggested incorporating application of water-soluble dyes in select areas where CATE have nested, are likely to nest, or immediately following nest removal, especially as water levels decline. USDA-WS in Florida, successfully deter nesting CATE from airfield movement areas using this method. The water-soluble dyes are typically made from solvents (e.g., water), pigment (e.g., chlorophyll or other water-soluble pigments), binder (e.g., resin styrene or acrylic polymers), and additives (e.g., thickeners or surfactants). Due to the variety of water-soluble dyes that are available, all products selected for application would be irrigation safe and environmentally safe (e.g., non-toxic and inert). This method was not required or applied in 2024 or 2025 but may be considered in the future. USDA-WS will coordinate with the Adaptive Management Work Group and BOR to ensure compliance with all relevant laws and regulations.

Citations

United States Army Corps of Engineers Walla Walla District. 2014. Inland Avian Predation Management Plan.