Snowy Egret
Egretta thula

REGULATORY STATUS
USFWS: Migratory Bird
USFS R2: No special status
USFS R4: No special status
Wyoming BLM: No special status
State of Wyoming: Protected Bird

CONSERVATION RANKS
USFWS: No special status
WGFD: NSS3 (Bb), Tier II
WYNDD: G5, S1S2
Wyoming Contribution: LOW
IUCN: Least Concern
PIF Continental Concern Score: Not ranked

STATUS AND RANK COMMENTS
The Wyoming Natural Diversity Database has assigned Snowy Egret (*Egretta thula*) a state conservation rank ranging from S1 (Critically Imperiled) to S2 (Imperiled) because of uncertainty about population trends for this species in Wyoming.

NATURAL HISTORY

Taxonomy:
There are currently two recognized subspecies of Snowy Egret, which are weakly distinguished by minor size differences: *E. t. thula* breeds in eastern North America, the Greater Antilles, and throughout South America, while *E. t. brewsteri* breeds in western North America west of the Rocky Mountains [1, 2]. Both subspecies are likely found in Wyoming [3], but this has not been confirmed.

Description:
Identification of Snowy Egret is possible in the field. It is a medium heron; adults weigh approximately 370 g, range in length from 56–66 cm, and have wingspans of approximately 100 cm [1]. Males are slightly larger, but the sexes are otherwise similar in appearance [1]. Breeding adults have uniform white plumage with long plumes of delicate feathers on the nape, breast, and lower back that are used in courtship displays; a long S-curved neck; yellow eyes; bright lores that range from dark yellow to red; a long black bill; long black legs; and dark yellow or orange feet [1, 4]. In the non-breeding season the plume feathers are lost; lores and feet lighten to yellow; legs lighten to greenish-yellow (although the foreleg may remain black); and the base of the lower mandible lightens to gray [1, 4]. Cattle Egret (*Bubulcus ibis*) is similar in appearance to Snowy Egret, but can be distinguished by its orange-buff breeding plumes and reddish eyes, legs, and bill [4].

Distribution & Range:
Snowy Egret core breeding areas include the East Coast; Gulf Coast; lower Mississippi River watershed; patchily distributed inland marsh and wetland environments throughout the United States; coastal Mexico and Central America; Caribbean Islands; and much of South America [1]. Southwestern Wyoming falls within a large, western, inland breeding area for Snowy Egret, which encompasses parts of Utah, Idaho, Nevada, Oregon, and California. The species migrates through Wyoming in the spring and fall and is also a summer resident [3, 5]. Snowy Egret has been observed at waterbodies across Wyoming; however, confirmed breeding has been document in just 7 of the 28 latitude/longitude degree blocks, primarily in the southern half of the state [3, 5].

Habitat:
Snowy Egret is associated with a wide range of coastal and inland aquatic habitats, including shallow salt-marsh ponds, tidal channels, shallow bays, mangroves, swamps, marshes, reservoirs, lakes, rivers, flooded fields, wet meadows, and irrigation channels [1]. In Wyoming, Snowy Egret is found in low-elevation wetlands, flooded pastures, and along the shores of ponds, lakes, reservoirs, and rivers [3, 5]. This species utilizes a wide variety of nesting substrates depending on habitat and availability, including trees, shrubs, reeds, cactuses, and vines [1, 6]; however, most nests in Wyoming are found in shrubs, bulrushes, and cattails [5]. Nest are constructed out of loosely intertwined sticks and twigs, and may be lined with locally available grass, reeds, and moss [1]. Snowy Egret may also utilize existing nests if they are available [1].

Phenology:
Spring arrival of migrating and breeding Snowy Egrets in Wyoming starts in mid-April [3], but very little is known about the specific nesting and breeding habits of this colonial nesting species in the state. Clutch size typically ranges from 3–5 eggs, and eggs hatch after being incubated by both the male and female for 20 or 21 days [1]. If disturbed, young egrets are able to temporarily leave the nest when they are just 10 days old [1]. Snowy Egret is a single-brood species, but may renest following loss of the first nest [1]. In Wyoming, fall migration to wintering grounds begins in mid-August, with most migrants and residents leaving the state by late September [3].

Diet:
Snowy Egret is a wading bird that typically forages in shallow water, often in groups or in mixed interspecies flocks of wading and aquatic birds [1, 7-12]. Snowy Egret feeds on a wide variety of aquatic and terrestrial prey including fish, crabs, crayfish, shrimp, frogs, toads, lizards, snakes, snails, insects, and worms [1, 5, 13].

CONSERVATION CONCERNS

Abundance:
Continental: WIDESPREAD BUT PATCHY
Wyoming: VERY RARE
There are no robust estimates of abundance available for Snowy Egret in Wyoming. The species has a statewide abundance rank of VERY RARE and appears to be rare even within suitable environments in the occupied area [5]. Colonial nesting waterbird surveys conducted from 2002–2006 by the Wyoming Game and Fish Department (WGFD) recorded a range of 0 to 4 individuals annually across all surveyed sites [14-18]. From 1968–2015, annual Wyoming Breeding Bird Survey (BBS) detections of Snowy Egret ranged from 0 to 2, with none recorded in most years [19]. Only 1 Snowy Egret was detected during surveys for the Integrated Monitoring in Bird Conservation Regions (IMBCR) program between 2009–2015 [20]. While surveys conducted as

part of the BBS and IMBCR programs may occasional detect this species, neither is specifically designed to capture egret observations.

Population Trends:
Historic: UNKNOWN
Recent: UNKNOWN
Robust population trends are not available for Snowy Egret in Wyoming because the species is infrequently detected during monitoring efforts. The species experienced substantial global population declines and local extirpations in the late 1800s and early 1900s from over-hunting for its breeding plumes, but populations rebounded and even expanded in the mid-1900s after the feather trade ceased [1]. Survey-wide trend data from the North American BBS indicate that Snowy Egret numbers increased annually by 1.20% from 1966–2013 and 3.52% from 2003–2013, but neither trend estimate was statistically significant [21].

Intrinsic Vulnerability:
MODERATE VULNERABILITY
Snowy Egret has moderate intrinsic vulnerability in Wyoming due to low abundance, a dependence on a narrow range of habitats types, colonial nesting behaviors that can expose large numbers of breeding individuals to disturbance, and inherent risk of bioaccumulation of environmental toxins. Like other wading bird species, Snowy Egret forages in productive shallow-water environments, which is a relatively uncommon and unstable habitat type in Wyoming. Natural or anthropogenic disturbance to breeding colonies could potentially have a large negative impact on local populations of Snowy Egret. Compared to other avian species, Snowy Egret embryos have demonstrated high sensitivity to injected methylmercury during laboratory experiments [22], but it is not known how this translates to natural systems.

Extrinsic Stressors:
MODERATELY STRESSED
Snowy Egret is moderately stressed by extrinsic stressors in Wyoming, where already limited natural aquatic habitat is potentially vulnerable to climate change and drought, invasive plant species, and development for infrastructure, energy, and agriculture [23, 24]. Snowy Egret has demonstrated sensitivity to drought and changing water levels [3, 12, 25]. However, this species will use human-made wetlands and ponds as well as anthropogenic structures for foraging [26-28], which may support the idea that man-made aquatic habitats could help alleviate the loss or contraction of natural habitats in Wyoming [23]. Snowy Egret appears to be less sensitive to disturbance from motorized watercraft and passing vehicles on nearby roads than other waterbird species [29-31]. This species is at risk for bioaccumulation of mercury and other environmental contaminants from feeding in polluted aquatic habitats [25, 32-35].

KEY ACTIVITIES IN WYOMING
Snowy Egret is classified as a Species of Greatest Conservation Need (SGCN) by the WGFD. Current statewide bird monitoring programs are designed for monitoring breeding songbird populations and are unlikely to provide useful information on Snowy Egret. These monitoring programs include the BBS program conducted on 108 established routes since 1968 [21], and the multi-agency IMBCR program initiated in 2009 [20]. Since 1984, WGFD has conducted annual or periodic monitoring at the most important and productive sites for colonial waterbird SGCN to determine species presence and distribution, and to estimate number of nesting pairs. The most

recent effort was the culmination of a multi-year cooperative agreement between the WGFD and the United States Fish and Wildlife Service to conduct an intensive survey of all historic, known, potential, and new colonial waterbird breeding sites statewide as part of a western range-wide effort to track population size, trends, and locations of breeding colonial waterbirds in the western United States [36, 37]. In 2014, an online Atlas of western colonial waterbird nesting sites was produced with data collected and submitted by participating states [38]. Every three to five years, WGFD personnel visit known colonial waterbird nesting sites outside of Yellowstone National Park to evaluate water level conditions, determine species present at each site, and estimate the number of nesting pairs of colonial waterbirds. There are currently no research projects designed specifically for Snowy Egret in Wyoming.

ECOLOGICAL INFORMATION NEEDS

In Wyoming, Snowy Egret would benefit from research to determine its detailed distribution, the location and habitat characteristics of current breeding colonies, and the annual abundance of migrating and breeding adults. Beyond approximate arrival and departure dates, very little is known about the specific breeding habits of this species in the state, and nothing is known about nest success or fledgling survival at the few known breeding locations. Due to the scarcity and inherent vulnerability of Wyoming's aquatic habitats, it would be valuable to identify current and future anthropogenic and natural stressors to ensure the persistence of breeding and foraging habitat for Snowy Egret.

MANAGEMENT IN WYOMING

This section authored solely by WGFD; Zachary J. Walker. Snowy Egret is classified as a SGCN in Wyoming due to limited distribution of breeding sites and breeding site instability due to varying water levels. Colonial water bird surveys are conducted within the state, but existing data are not robust enough to support estimates of occupancy, density, or population trend. Targeted, species-specific survey methods may be warranted. Best management practices or key management recommendations to benefit Snowy Egret include protection of suitable breeding locations, minimize nesting disturbance, and maintenance of stable water levels throughout the nesting season [23].

CONTRIBUTORS

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Figure 1: Adult Snowy Egret in breeding plumage in Jefferson County, Colorado. (Photo courtesy of Bill Schmoker)

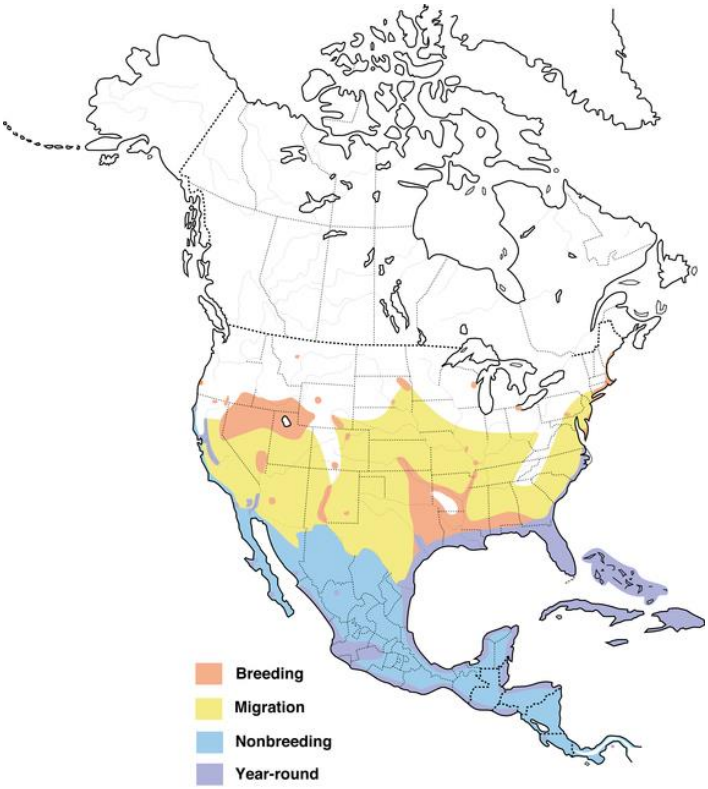

Figure 2: North American range of *Egretta thula*. (Map courtesy of Birds of North America, http://bna.birds.cornell.edu/bna, maintained by the Cornell Lab of Ornithology)

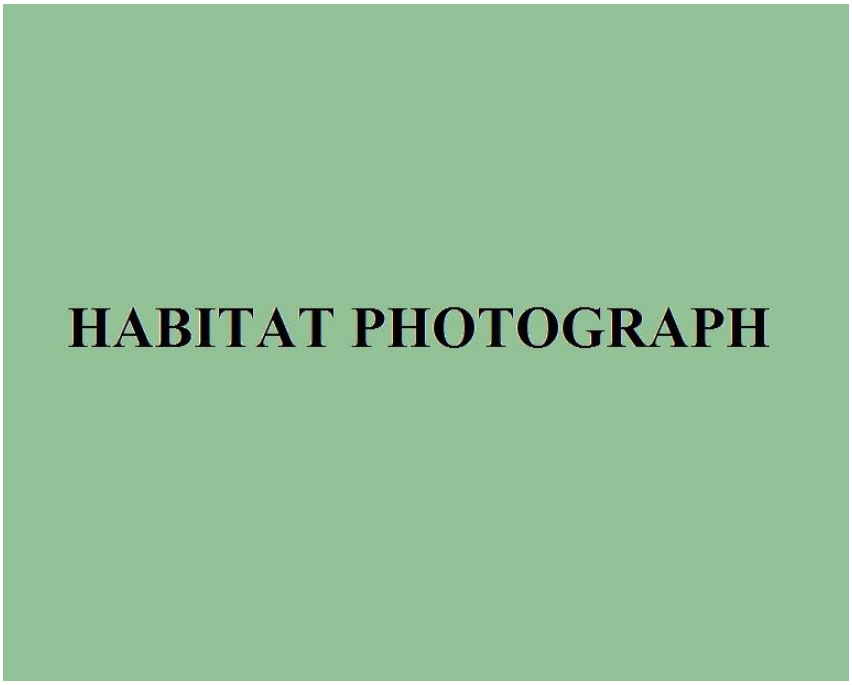

Figure 3: Photo not available.

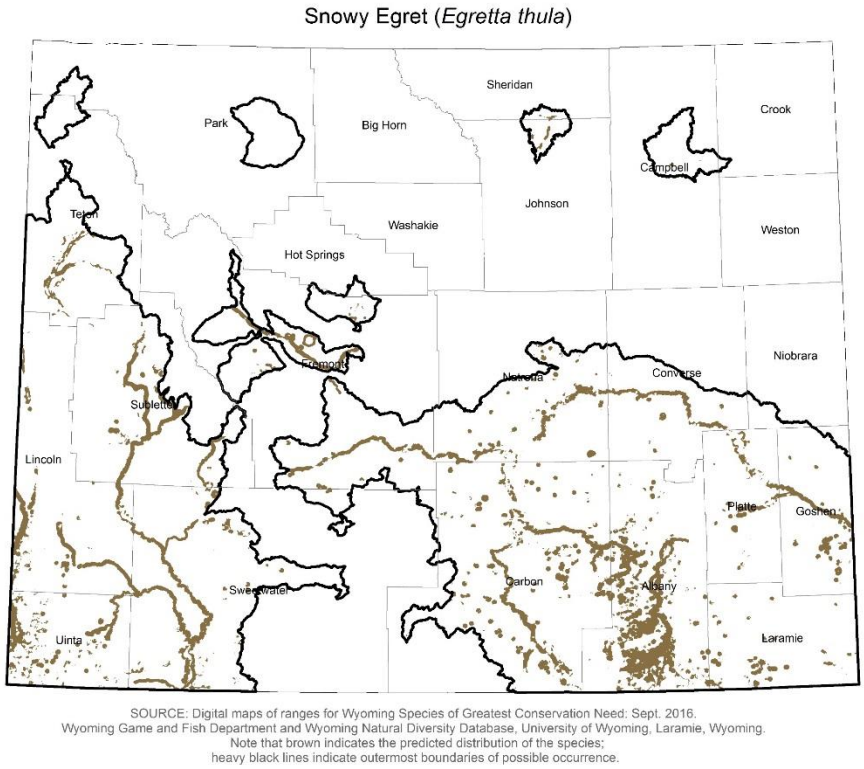

Figure 4: Range and predicted distribution of *Egretta thula* in Wyoming.