Searching out a Central Valley "*bird of mystery*:" The Tule Greater White-fronted Goose

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"We lay frozen in the ditch for 30 minutes, peering cautiously through the cattails along the edge of the refuge road with binoculars to see into the next pond. The shallow water was filled with thousands of ducks, lesser snow geese, Ross' geese, and greater white-fronted geese, but we intently watched the small flock of 15-20 geese swimming slowly at the edge of the pond, adjacent to a net hidden along the graveled road. These geese were larger-bodied and darker than the other greater white-fronted geese in the pond, with darker heads and larger bills. With the flip of a switch, the rockets roared to life, pulling the camouflaged nets over the flock. We scrambled up the bank and raced quickly to secure the net, for these were Tule Geese, the most uncommon subspecies of greater white-fronted geese in the world."

[From the author's field notes]

GREATER WHITE-FRONTED GOOSE POPULATIONS

Greater White-fronted Geese (*Anser albifrons*) are one of the few waterfowl species that breeds across the Arctic from Russia to Canada and Greenland. Four subspecies are currently recognized (Owen 1980), including the nominate European form (*A. a. albifrons*), The North American "Pacific White-fronted Goose" (*A. a. frontalis*), the Greenland race (*A. a. flavirostris*), and, the subject of this paper, the "Tule Goose" (*A. a. elgasi*).

The Tule Goose is the least numerous subspecies, with a breeding population estimated by some reports at less than 10,000 individuals. The status and ecology of this subspecies has been debated for nearly a century, resulting in a description of it as a "bird of mystery" (Elgas 1972, Smith 1989). Even its subspecific name is in doubt, cited alternatively in various publications over the years as *A. a. gambeli*, *A. a. gambelli*, and *A. a. elgasi*. Tule Geese were first reported from specimens taken by hunters in the Central Valley of California (Swarth and Bryant 1917), but those authors considered these birds synonymous with a subspecies (*A. a. gambelli*) described from specimens collected earlier in Texas (Hartlaub 1852). The American Ornithologist's Union (AOU 1998) does not currently recognize the name *gambelli* as referring to the Tule Goose, accepting

instead the name *elgasi* (Delacour and Ripley 1975). For more discussion of this taxonomic tangle, see Dunn (2005).

FIELD IDENTIFICATION

Greater White-fronted Geese are named for the white feathering around the base of the bill, which is pink in color with a white tip. They are gray-brown with orange feet and legs and are commonly called "speckle-bellies" because of the irregular black barring on the breast and belly. Young geese are distinguished from adults by fewer dark bars on a grayish breast and belly, a lack of white feathers at the base of the bill, and a black, not whitish tip on the bill. Young geese typically make up 5-40% of the flocks in the winter, depending on the breeding success for that year. Greater White-fronted Geese are monomorphic, with males about 5% larger than females in structural dimensions, but nearly 10% heavier (Ely and Dzubin 1994). Greater White-fronted Geese mate for life and remain in family groups throughout the winter.

Tule Geese are difficult to separate from the other Greater White-fronted Geese, such as the Pacific White-fronted Geese with which they co-occur in winter. However, there are visual and ecological cues that allow

Figure 1. Sparser barring on underparts of Tule Goose (left) compared with Pacific White-fronted Goose (right).

USGS photo

Figure 2. Contrasting head and neck appearance of Tule (front) and Pacific (back) Greater White-fronted Geese. Tule Geese have darker overall appearance with more elongated and larger bills and a dark line of feathers from the crown down the neck.

USGS photo

Figure 3. Tule Goose with neck collar and radio transmitter.

USGS photo

separation much of the time (Table 1). Their larger size is best detected when they are adjacent to Pacific White-fronts, as is their darker coloration. They have fewer bars on their under parts (Figure 1), and longer legs. Their dark chocolate color is most obvious on the top of the head and down the neck (Figure 2), giving their heads a striped or "duck-tail" appearance. Their bills are noticeably longer and, in the hand, appear wider and taller, as well (Orthmeyer et al. 1995). Some Tule Geese have a yellow eye ring, and their calls have been described as hoarser and lower-pitched than those of Pacific White-fronts (Moffitt 1926). Tule Geese are more often found in small flocks compared with Pacific White-fronts, and they frequent emergent marshes in the Central Valley. Pacific White-fronts are commonly in large flocks, especially when foraging in harvested fields.

Table 1. Major features distinguishing Tule and Pacific Greater White-fronted Geese (Krogman 1973, 1979, Orthmeyer et al. 1995, Ely et al., *in press*). F = females, M = males.

Characteristic	Pacific	Tule
Weight (grams)	2100 F, 2300 M	2450 F, 2850 M
Body Color	gray	dark chocolate
Head Color	gray	uniform dark or dark rim
Belly barring	heavy	sparse
Tarsus (mm)	84-86 F, 88-90 M	91-92 F, 97 M
Head Shape	rounded	elongated
Bill Size (mm)		
Culmen	47-50 F, 51-53 M	54 F, 58-59 M
Width	23-24 F, 24-25 M	26 F, 27 M
Height	23.5 F, 25 M	27 F, 29 M
Eye Ring	none	yellow/orange in some
Voice	"lek-er-lek"	lower pitched
Primary Habitat	varied, vegetated to open marsh	vegetated emergent marsh
Flock size	to thousands	small, often family group
Range	Nearctic	Alaska to California

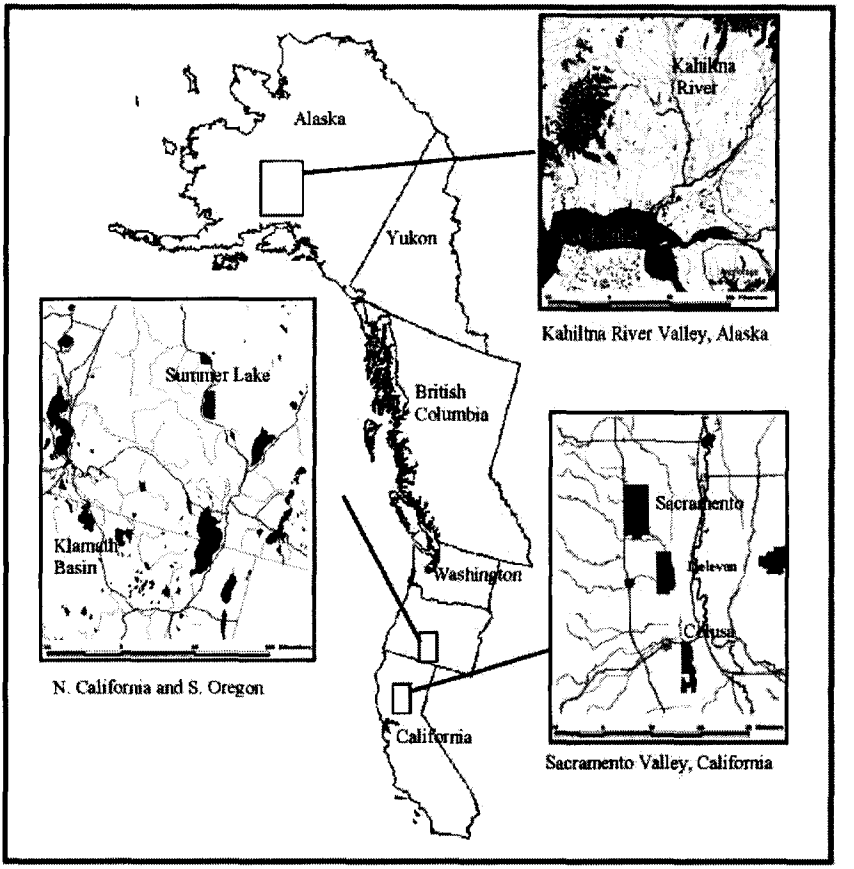

Figure 4. Tule Goose distribution map (unpubl. data).

BREEDING AND STAGING AREAS

Radio telemetry and collar-marking studies (Figure 3) have helped us identify the main areas used by Tule Geese (Figure 4), although only about 30 nests have been located since the first report of nesting in 1968 (Elgas 1970). Their central Alaskan breeding area north of Anchorage, still imperfectly defined, forms a triangle south of Mt. Denali from the Susitna River on the east to the Yentna River on the west, bounded by Cook Inlet to the south. After the breeding season, Tule Geese migrate south and stage along the Gandil River south of the Bering Glacier on the Copper River Delta of Alaska. Beginning in late August, the early-arriving Tule Geese are the first Greater White-fronted Geese that are seen in southern Oregon (Summer Lake, Chewaukan Marsh, and Crump Lake) and northeast California (Lower Klamath National Wildlife Refuge [hereafter, NWR).

WINTERING GROUNDS

Tule Geese begin arriving in the west side of the Sacramento Valley at Sacramento and Delevan NWRs (Fig. 4) in early September. Most of the birds are observed in the southern ends of these two refuges, but some are seen at Colusa NWR and Grizzly State Wildlife Area in Suisun Marsh. Historically, some Tule Geese were seen in the Napa Marshes, but fewer than 20 individuals have been reported from this population in recent years (L. Allen, pers. comm.). In the spring, birds return to southern Oregon (Fig. 4: Summer Lake and the Klamath Basin) where they stage through mid April (Wege 1984). They migrate up the coast through the Queen Charlotte Islands, and stage at Palmer Hay Flats on Cook Inlet. The best viewing areas for Tule Geese are at Summer Lake in September and in February-April, and along the southern end of the Delevan and Sacramento NWR from September through February.

CONSERVATION AND MANAGEMENT

Most Greater White-fronted Geese in the Pacific Flyway breed on the tundra in western Alaska, primarily on the Yukon-Kuskokwim Delta. Tule Geese breed in a restricted region of Alaska in the boreal forest in the shadow of Mt. Denali, where breeding sites are limited. They also have strong site fidelity in the winter, and spend most of the time on refuges, rather than foraging in rice fields with other Greater White-fronted Geese. Future management for the Tule Geese will use our recent findings to protect remaining habitats in breeding areas such as the Kahiltna River Valley, migration areas such as the Gandil River Lowlands and at the Summer Lake Wildlife Area, and wintering areas at Delevan and Sacramento NWRs. Although an air of mystery still surrounds the Tule Goose, we hope our continuing studies will help to protect the remaining members of this extraordinary subspecies.

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