The Narrow-leaved Cat-tail, *Typha angustifolia*, and the Hybrid Cat-tail, *T.* X *glauca*, Newly Reported from Saskatchewan

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The Narrow-leaved Cat-tail, *Typha angustifolia* L., and the hybrid, *T.* X *glauca* Godron, are newly reported for Saskatchewan from Regina and Buffalo Pound Lake, and the latter also from Eyebrow Lake.

Key Words: Narrow-leaved Cat-tail, *Typha angustifolia, Typha* X *glauca*, Saskatchewan, distribution.

The Narrow-leaved Cat-tail, *Typha angustifolia* L., has been reported in North Dakota to extend northwestward to Rolette, McHenry, Ward, and McKenzie Counties (McGregor et al. 1977, p. 531), and in southeastern Manitoba from Vita, Otterburne, Agassiz Provincial Forest, and Gimli (Löve and Bernard 1959; Dugle and Copps 1972; Scoggan 1978, p. 231; Boivin 1979, p. 164). F.W. Schueler (personal correspondence), on a 1976 survey along Highway 6 in the Interlake Region of Manitoba, recorded *T. angustifolia* from near Oak Point, Eriksdale, Camper, Grahamdale, Fairford, to 66 km north of Fairford. Interestingly the latter stations extend the range of the species about 130 km north of the southern limit of the boreal forest zone. Dugle and Copps (1972) also cited a more western Manitoba collection by J. L. Parker (*no. 1403*, WIN) from "Sec. 18–26–22", a locality personally confirmed by the collector, James L. Parker (personal correspondence), as from about 7 miles (= 11 km) north-northwest of Gilbert Plains, northwest of Dauphin. *T. angustifolia* was not listed for Alberta by Moss (1959), Boivin (1979), or Packer (1983), nor has it been previously reported from Saskatchewan.

The first Saskatchewan record for the Narrow-leaved Cat-tail, *T. angustifolia*, appears to be a collection by George Ledingham, on 3 July 1978, from the southwest edge of Regina, just south of the junction of Pasqua Street and Highway (Trans-Canada) No. 1, where it occurred on the muddy margins of a large highway borrow pit with the Common Cat-tail, *Typha latifolia* L. (*no. 5877-a*, USAS & SASK; same location, on 8 August 1982, *no. 7819*, USAS).

The second known Saskatchewan locality record of the Narrow-leaved Cat-tail is a collection by Wayne Harris and Sheila Lamont, on 18 September 1983, from Buffalo Pound Lake at Nicolle Flats, where it was rare in a marsh with the Common Cat-tail (*Typha latifolia*) and bulrushes (*Scirpus acutus* Muhl. and *S. paludosus* A. Nels.) (*coll. no. 1782*, SASK). Figure 1.

At both localities, the Narrow-leaved Cat-tails were apparently hybridizing and possibly intergrading with the more numerous Common Cat-tails in the area, forming variable patches where the intermediate forms even out-numbered individuals of "good" *T. angustifolia*. The taxonomic name that is applicable to the natural hybrids between the two cat-tail species is *T.* X *glauca* Godron [synonyms: *T. latifolia* var. *elongata* Dudley; *T. angustifolia* var. *elongata* (Dudley) Wieg.]. Thus, the Hybrid Cat-tail, *T.* X *glauca*, is also reported here from the same Saskatchewan localities as *T. angustifolia*: Regina (3 July 1978, *Ledingham no. 5877*, USAS; 26 July 1979, *Ledingham no. 6287 & 6288*, USAS) and Buffalo Pound Lake (17 September 1983, *Lin Gallagher*, USAS). A collection from Eyebrow Lake in the Upper Qu'Appelle River Valley, 7 miles (= 11 km) northeast of Tugaske (1 July 1977, *D. Phillips no. 10*, USAS) also appears referrable to *T.* X *glauca*.

Such apparent hybrids and intergrading local populations have reportedly also been associated with most Manitoba stations of the Narrow-leaved Cat-tail (Löve and Bernard 1959; Dugle and Copps 1972; Scoggan 1978; Boivin 1979; and F. W. Schueler personal correspondence).

The two cat-tail species can be distinguished from each other by the characteristics listed in the comparison table (Table 1), which was compiled from various sources, but primarily Smith (1967). Some of the diagnostic characteristics can be seen in Figure 2.

Our Saskatchewan hybrid populations ("swarms") appear highly variable, including not only clear-cut intermediates, but almost every possible character combination between those of the putative parents (see Table 1), as well as other variants less obviously intermediate such as very short or double ♀ spikes. Since the latter variants have been noted elsewhere in *T. latifolia* populations where hybridization with *T. angustifolia* is not suspected, their presence alone

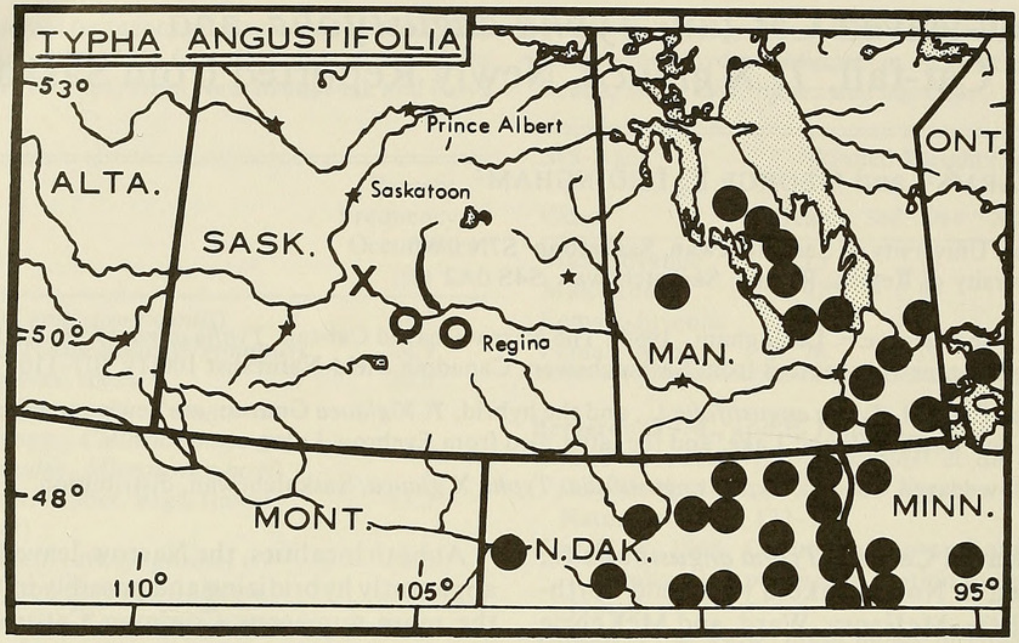

FIGURE 1. Distribution of *Typha angustifolia*. Solid circles indicate locality records of the species in neighboring provinces and states. Open circles indicate new Saskatchewan records of *T. angustifolia* and the hybrid, *T.* X *glauca*. "X" indicates new Saskatchewan records of *T.* X *glauca* alone.

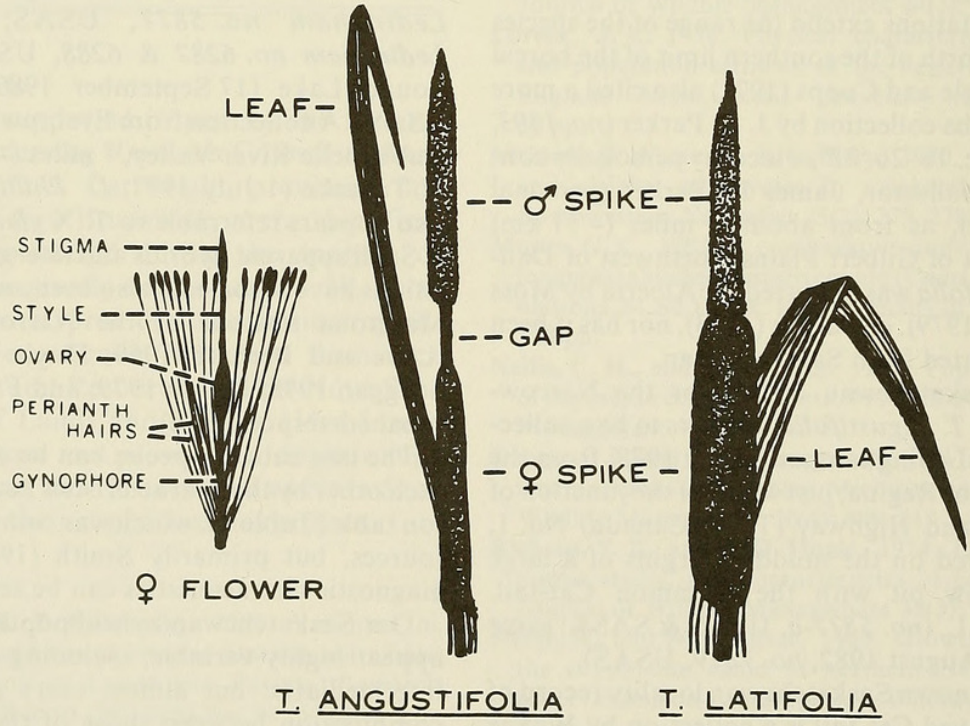

FIGURE 2. Comparison of inflorescence spikes and leaves of *Typha* species, and a ♀ flower of *T. angustifolia* enlarged.

cannot be construed as evidence of such hybridization. But there seems little doubt that their frequency is much higher than otherwise would be expected in our obviously hybrid populations. How broadly inclusive of the above variants our interpretation of the hybrid *T.* X *glauca* should be is debatable and not answerable here. But it would seem best to refer to this name only the clearly intermediate forms.

The locations of the new Saskatchewan records of *T. angustifolia* and *T.* X *glauca*, plus previous reports of *T. angustifolia* from adjacent provinces and states, are shown in the distribution map (Figure 1).

The Narrow-leaved Cat-tail is believed by some (e.g. Dugle and Copps 1972; Boivin 1979) to be currently extending its range northward and westward. Stevens (1950) reported it as "apparently . . . only recently introduced" into northwestern North Dakota, and Dugle and Copps (1972) considered it to represent an introduced species into southeastern Manitoba. Thus the newly reported Saskatchewan stations likely represent recent introductions. This cat-tail species should be looked for elsewhere in southern, east-central, and especially southeastern Saskatchewan.

Acknowledgments

Grateful acknowledgment is given to Sheila M. Lamont and Wayne C. Harris, of Raymore, Saskatchewan, for their important contribution to this paper in having the taxonomic acumen to recognize in the field, and to realize the significance of, *Typha angustifolia* at Buffalo Pound Lake.

TABLE 1. Comparison of *Typha angustifolia* and *T. latifolia*

Typha angustifolia L. Narrow-leaved Cat-tail	*Typha latifolia* L. Common Cat-tail
♂-flowered and ♀-flowered parts of spike separated by a distinct gap over (1–) 2.5 cm wide.	♂-flowered and ♀-flowered parts of spike contiguous or with gap usually less than 1 cm wide.
Fruiting spikes more slender, less than 1.7 (–2) cm in diameter.	Fruiting spikes thicker, 1.7–3 cm in diameter.
Leaf-blades mostly less than 1 cm broad, somewhat rounded on back, quite brittle, and dark-green.	Leaf-blades (0.8–) 1–2.5 cm broad, nearly flat on back, softer (not brittle), and light-green.
♀ flower-stalks below perianth-hairs stouter, blunt, less than 0.8 mm long.	♀ flower-stalks slender, 1–2 mm long.
Pollen-grains single.	Pollen-grains in tetrads.
Leaf-sheath edges overlapping and closed at throat, at least the upper ones with ± distinct auricles.	Leaf-sheath edges spread open nearly to base, ± tapering into blade portion, usually lacking distinct auricles.
Stigmas nearly linear.	Stigmas lanceolate to lance-ovate.
Fruiting spikes dark- to reddish-brown, lacking any blackish markings.	Fruiting spikes dark-brown, often with blackish markings.
Stems more slender.	Stems mostly stouter.
Rhizomes more slender and creeping.	Rhizomes very thick and spreading.
Leaves exceeding (i.e. over-topping) spikes.	Leaves mostly equalling spikes.
Perianth-hair tips enlarged (somewhat club-shaped) and brownish.	Perianth-hair tips linear and colorless.
♂ flowers subtended by linear, often split-tipped, brownish bracteoles.	♂ flowers subtended by hair-like, non-split, colorless bracteoles.
Seeds positioned somewhat above middle of achene-fruit.	Seeds positioned at middle of achene-fruit.
Specimens that are clearly intermediate between *Typha latifolia* and *T. angustifolia* by the table may be referred to the putative hybrid taxon *T.* X *glauca*.	

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Addendum: Subsequent to the revision of this paper a third Saskatchewan locality for the Narrow-leaved Cat-tail, *Typha angustifolia* L., was discovered by George F. Ledingham at *ca.* 4 km north of Sintaluta (*ca.* 18 km east of Indian Head) 11 September 1984, *G. F. Ledingham 8906* (USAS and SASK).

Survival of Dabbling Duck Broods on Prairie Impoundments in Southeastern Alberta

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Brood survival of Northern Pintails (*Anas acuta*) and Gadwalls (*Anas strepera*) was examined on prairie impoundments near Brooks, Alberta. A maximum of 4 out of 15 broods (27%) survived. It is suggested that duck brood survival is low in prairie/grassland habitats.

Key Words: Northern Pintail, *Anas acuta,* Gadwall, *Anas strepera,* brood survival, duckling, prairie, Alberta.

Brood survival rate, the proportion of broods in which at least one individual survives to fledging, has been recognized as an essential parameter in duck population dynamics (e.g., Cowardin and Johnson 1979). Studies of brood survival have shown that losses of entire broods may be considerable and consequently production estimates based solely on numbers of nests, nest success rates and brood counts may be misleading (Ball et al. 1975; Reed 1975; Ringleman and Longcore 1982; Talent et al. 1983). Dzubin and Gollop (1972: 135) concluded that brood survival was "the single most important proximate factor controlling fall population size" of Mallards (*Anas platyrhynchos*) on their grassland study area during the drought years. Nevertheless, brood survival rates and the effect of various habitat conditions upon them remain poorly documented (Cowardin and Johnson 1979). The objective of the present study was to examine brood survival of dabbling ducks on water impoundments in the mixed prairie of southeastern Alberta. Two species, Northern Pintail (*Anas acuta*) and Gadwall (*Anas strepera*), were examined in this study.

Study Area and Methods

The study was conducted in an area of grazed mixed grass prairie about 35 km south-east of Brooks, Alberta during 1981 and 1982. The study area contained two impoundments [Kininvie F (50° 22′N, 111° 30′W) and Kininvie S (50° 19′N, 111° 30′W); described by Giroux 1981] which are managed for waterfowl production by Ducks Unlimited Canada. At high water levels, Kininvie F is approximately 2.0 km^2 in area and Kininvie S is about 0.75 km^2. These basins contain artificial islands and are less than 1 m deep except for 1–2 m moats around the islands. During