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# *Salix* × *polychroma* (*Salicaceae*) — a new anthropogenic hybrid

## *Salix* × *polychroma* (*Salicaceae*) — новый антропогенный гибрид

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**Abstract.** A new anthropogenic hybrid, *Salix* × *polychroma* I. V. Belyaeva et O. V. Epanch., in cultivation in Russia, and United Kingdom, is described and its characteristics are given.

**Keywords:** *Salicaceae*, *Salix*, cultivation, new hybrid.

**Аннотация.** Приводится описание нового антропогенного гибрида *Salix* × *polychroma* I. V. Belyaeva et O. V. Epanch., даются его характеристики в условиях культивирования в России и Великобритании.

**Ключевые слова:** *Salicaceae*, *Salix*, культивирование, новый гибрид.

The global cultivation of plants and moving live plant material around the world are the two main reasons for the appearance of hybrids between taxa that would never grow in the same place in nature. We suggest that such hybrids should be called anthropogenic as they result from the intentional or accidental activity of men. Anthropogenic hybrids could be artificial (produced intentionally by men) or spontaneous (unintentionally occurring).

During the long-term cultivation of species of *Salicaceae* Mirb. in the Botanic Garden of the Ural Branch of the Russian Academy of Sciences in Yekaterinburg (BG UB RAS) an unusual hybrid between *Salix nakamurana* Koidz. (sect. *Glaucae* Pax) and *S. hastata* L. (sect. *Hastatae* A. Kern.) spontaneously occurred while these species, growing in one spot, were flowering at the same time in 2007.

The female parent plants, *S. nakamurana*, were obtained from the private collections of Johannes Batke (Braunschweig, Germany) and Siegfried Geissler (Gorschmitz, Germany), both plants belonging to the same clone as the plant grown in the Arctic-Alpine Garden of the Walter Meusel Foundation [Arktisch-Alpiner Garten der Walter-Meusel-Stiftung] (Chemnitz, Germany). Brief information about this willow was given in our earlier publications (Belyaeva et al., 2003, 2020) and it was noted that it does not flower every year and does not produce many catkins.

The specific characteristics of the cultivated female parent willow, *S. nakamurana* are:

(a) rapid growth and prostrate habit with long creeping greenish branches with buds recurved from the shoot at an angle (Fig. 1: A);

(b) mostly round rugose leaves on long (to 4.5 cm) petioles with acute or retuse apex and cuneate, round or cordate base, hairy when young becoming nearly glabrous when mature; stipules minute (Fig. 1: B);

(c) fruiting catkins to 8 cm long on a floriferous shoot with two small leaves at the base (Fig. 1: C); mature capsules 0.9–1.1 cm long, glabrous;

(d) this clone is frost-resistant and has fully lignified shoots before the first snow.

The male parent plant, *S. hastata*, was introduced to the Middle Urals, where the BG UB RAS is situated, in 1996 from the environs of Vsevolodo-Blagodatskoye village, Northern Urals. Additional information about this willow and photographs can be found in our previous publication (Belyaeva et al., 2003: 56–59).

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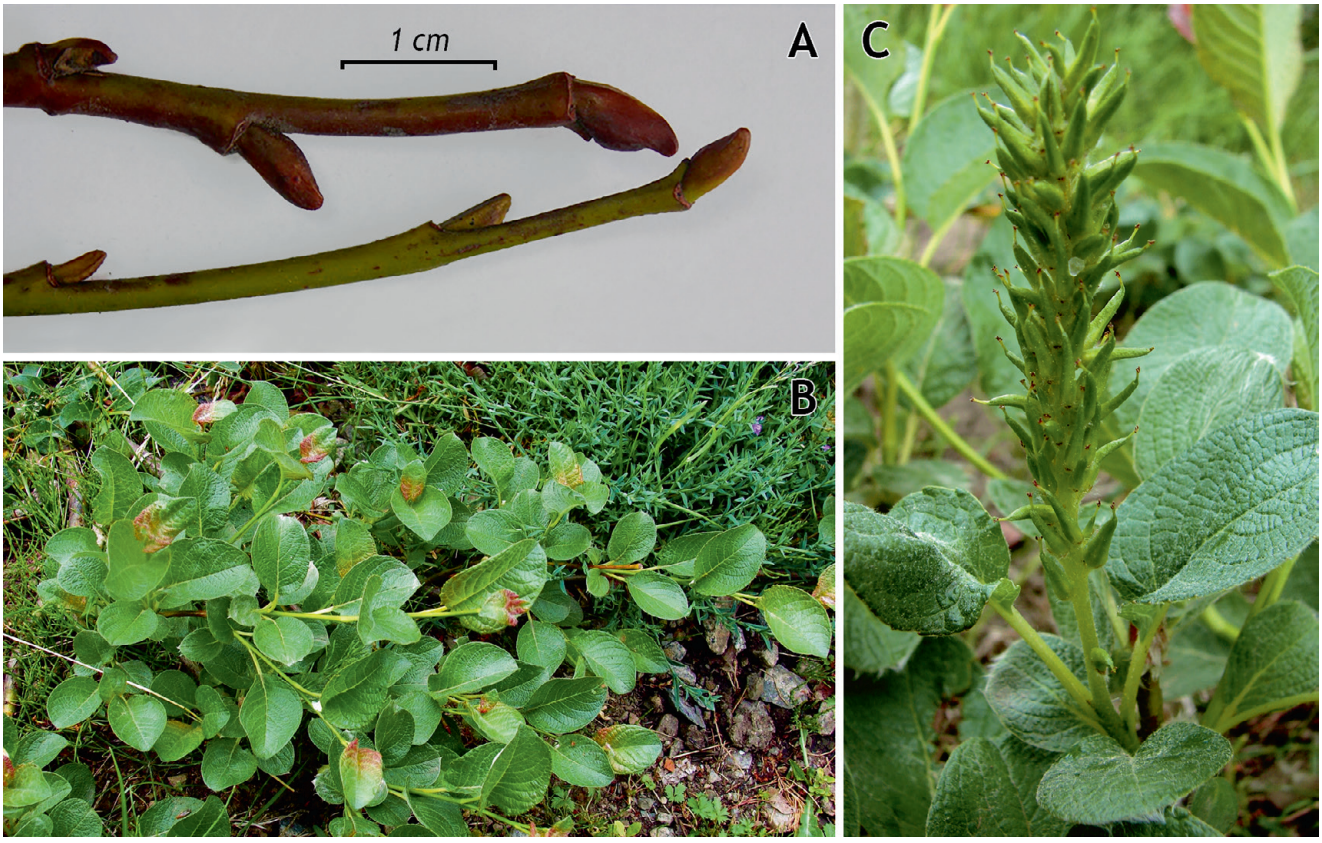



Fig. 1. *Salix nakamurana* at the Botanic Garden UB RAS, Yekaterinburg (Russia).
A — buds, 21 III 2007; B — habit and leaves, 5 VI 2007; C — fruiting catkin, 5 VI 2007. Photos by O. V. Epanchintseva.

The specific characteristics of the cultivated male parent willow, *S. hastata* are:

(a) low shrub or small tree with dark brown branchlets and appressed buds;

(b) mature leaves elliptic, ovate or obovate on short petioles (to 1.2 cm) with leaf-shaped stipules (0.6–1.2 cm), short acuminate, with flat or folded apex, serrate; young leaves often reddish;

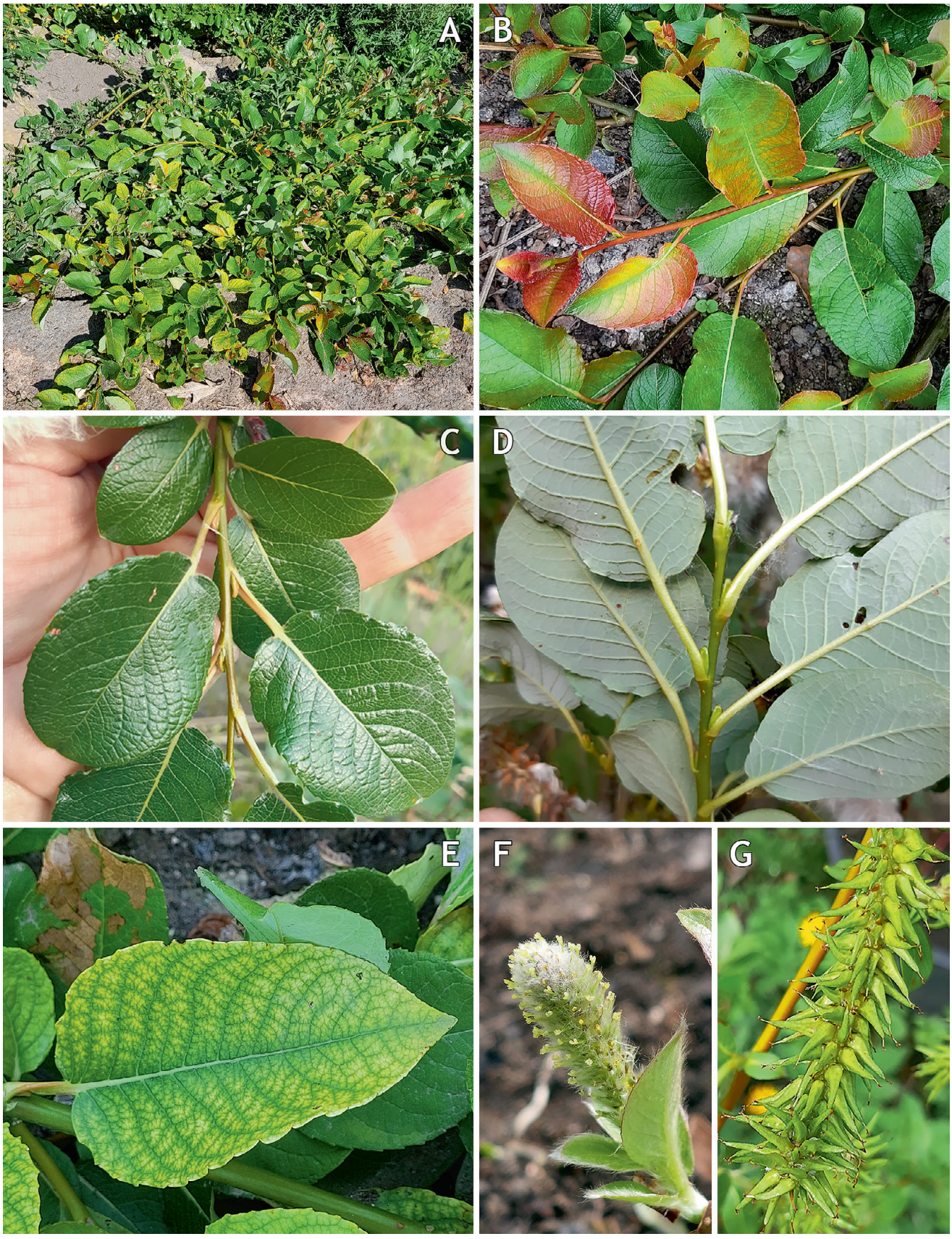
(c) male catkins loosely flowered on pubescent peduncle (to 2.5 cm) with 2–6 leaflets at base.

We assume that the female plant of *S. nakamurana* was pollinated in May 2007 with pollen of *S. hastata* that was growing next to the female plant and was flowering at the same time. No other male willows were in flower at that place and that time. Only one fruiting catkin ripened on *S. nakamurana* and it was collected with seeds on June 21st 2007. Three seedlings at BG UB RAS (accession numbers 507, 607, 707) were successfully grown from these seeds. After long cultivation these hybrid willows were established in the environment of the BG UB RAS and one clone (607) is now established in the private collection of Irina Belyaeva and Keith Chamberlain at Willow Mount, Lydbrook (UK). All the plants have started to produce their own seeds and seedlings, taking advantage of pollination by their neighbouring relatives and other willows. Thus, it is time to give this new spontaneous anthropogenic hybrid a scientific name.

**Salix × polychroma** I. V. Belyaeva et O. V. Epanch., nothosp. nova (*S. nakamurana* Koidz. × *S. hastata* L.). — Fig. 2.

A low prostrate shrub with long creeping and rooting branches and ascending branchlets (Fig. 2: A). Branchlets and branches greenish, olive, olive-brownish or

Fig. 2. *Salix* × *polychroma*.
A — habit, 21 VI 2022; B — multicoloured leaves, 6 V 2022; C — leaves (upper side) and buds on a regular shoot, 30 VI 2007; D — leaves (lower side), 30 VI 2007; E — a marbled variant of multicoloured leaves, 21 VI 2022; F — female catkin, 9 IV 2022; G — catkin with mature capsules, 21 V 2015.
A, B, E, F — Willow Mount, Lydbrook (United Kingdom), photos by I. V. Belyaeva. C, D, G — Botanic Garden UB RAS, Yekaterinburg (Russia), photos by O. V. Epanchintseva.


A
B
C
D
E
F
G

reddish in spring and summer, mostly glabrous or with some hairs. Buds dimorphic, ovate, glabrous or pubescent, carinate, recurved from the shoot at an angle on the creeping branches and appressed on the ascending branches. Generative buds 0.4–0.7 cm long with a bent apex, vegetative 0.4–0.5 cm long. Leaves (Fig. 2: B–E) alternate, broad ovate or broad elliptic, 8–9.7 cm long and 5.5–6.7 cm wide, with short acuminate flat or twisted apex and round or slightly cordate base, leathery, glabrous or hairy along the veins and on the leaf tip and margin, dentate, nearly lustrous, multicoloured at the same time on the same shoots, mature leaves green or yellowish green above (marbled, Fig. 2: E), slightly glaucous below, young leaves always reddish, changing colour when dry. Stipules on ascending shoots are rudimentary, on creeping branches — semi-cordate, 0.2–0.7 cm long, irregularly dentate. Petioles 1–2.7 cm long, yellowish green with red widened base, glabrous or with a few hairs. Catkins, female, loosely flowered, on stalks 1.2–1.4 cm with 2–4 leaflets at the base 3.5–5 cm long, getting longer (to 9–10 cm) while fruiting (Fig. 2: F, G). Floral bracts 1–1.5 mm long, rounded, pale with dark blunt apex and long white straight or slightly twisted hairs. Ovary fusiform, glabrous, green, on 3–3.5 mm stalk; styles long, connate, 2.5–3.5 mm; stigmas bifid, to 1 mm long. Nectary 1, adaxial, 0.2–0.3 mm long. Capsules 6.5–10 mm long; number of seed scars in capsule is variable (10–16), in most studied capsules — 12.

Holotype: United Kingdom, Gloucestershire, Lydbrook, Willow Mount garden, 17 VI 2022, I. V. Belyaeva, 3-2022; cultivated in the private collection of Irina V. Belyaeva and K. Chamberlain since VI 2012 and at Willow Mount since 5 XI 2018 (WSY[1]: WSY0167916!; isotypes — LE!, MHA!, NSK!, SVER!).

Paratypes: Russia, Yekaterinburg, Botanical Garden of Ural Branch RAS, *Salix* collection, 22 VI 2022, O. V. Epanchintseva, 607-1-22, ♀; cultivated under accession number 607 (SVER0568993!, SVER0568994!); *United Kingdom, Gloucestershire, Lydbrook, Willow Mount garden,* 22 III 2022, *I. V. Belyaeva,* 1-2022, ♀ (WSY0167918!); *ibidem,* 3 V 2022, *idem,* 2-2022 (WSY0167917!).

Diagnosis. *Salix* × *polychroma* differs from *S. nakamurana* (see descriptions by Koidzumi, 1913; Nedoluzhko, 1995; Belyaeva et al., 2003, 2020) in having multicoloured leaves of different form with developed stipules on creeping branches. The new hybrid differs from *S. hastata* (see descriptions by Linnaeus, 1753; Bolshakov, 1992; Nedoluzhko, 1995; Belyaeva et al., 2003, 2006, 2020; Valyagina-Malyutina, 2018) in a low prostrate form of growth with long rooting branches and short ascending shoots, buds recurved from the shoot at an angle on the creeping branches, and in different form of multi-coloured leaves.

Etymology. The epithet "polychroma" derives from Greek "polychromus" that means "many-coloured" (Stearn, 2004: 471) and refers to the multi-coloured leaves of this willow.

Distribution. Described from cultivated plants. Currently, it is cultivated in Yekaterinburg (Russia), and Lydbrook (United Kingdom).

Use. The potential uses of this hybrid willow could be as an ornamental plant because of its multicoloured leaves and for stabilising of slopes by long spreading and rooting branches. The new hybrid is fast-growing, tolerates pruning well and has good rooting capacity (90%) of its cuttings.

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