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PLANT PORTRAIT

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1164. *Echinacea simulata* McGregor

Compostiae

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Summary

Echinacea simulata McGregor (Compositae: Heliantheae: Zinniinae) is described and illustrated. Notes are provided for the species' cultivation, propagation, likely pests and diseases, and availability. A full synonymy is given, along with type citations and known presence of type material, together with relevant notes. Statements of the species' distribution, habitat and ecology, phenology, etymology, conservation status and vernacular names are provided. Whilst the conservation status of the species (across its whole range), is considered as 'Apparently Secure' (i.e. Least Concern), the species is clearly under various threats in some states throughout its range. Some of the threats (removal of plants from the wild, and over-zealous seed collecting) are doubtless because of its similarity to *E. pallida*, one of the 'Echinacea' trio of species used in herbal medicines. The material from Wakehurst's North American Prairie plantings was originally named as *E. pallida*, a similar species but which has white pollen and burgundy-coloured paleae, but this taxon has yellow pollen and pinkish to purple or orange paleae, critical determination showed it to be *E. simulata*. Differences in the taxonomic treatment of this taxon are commented on, as is the relationships with other species. The proposed infrageneric classification is in some doubt, especially when compared with the phylogeny provided by chloroplast genomes.

INTRODUCTION

The subject of the present plant portrait (Plate 1164), *Echinacea simulata* McGregor, has proven to be one of a number of confusing, and wrongly named, plants in the North American

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Prairie plantings at the Royal Botanic Gardens, Kew at Wakehurst Place. Originally accessioned as *E. pallida* (Nutt.) Nutt., had it not been for one of us noticing the yellow pollen, this article may well have proceeded to concentrate on that species, rather than its true identity.

Echinacea Moench (Compositae: Heliantheae: Helianthinae) is a small genus, based originally on *Rudbeckia purpurea* L. (= *Echinacea purpurea* (L.) Moench – see Hind et al., 2025 [2026] for a rather full explanation of issues concerning that species). In the earliest revision, McGregor (1968c) recognized a total of nine species and two varieties, and his basic concepts are still used today (see Urbatsch et al., 2006). In somewhat of a contrast, Binns et al. (2002), in a significant lumping treatment (based on a cluster analysis in their morphometric revision), reduced this to four species in two subgenera, recognizing a total of eight varieties, and relegated our plant to a variety of *E. pallida*, in subgenus *Pallida* Binns, B.R. Baum & Arnason. However, in a more modern, phylogenetic analysis (based on chloroplast genomes) Zhang et al. (2017) recognized nine species 'unambiguously', and no infraspecific taxa were recovered. Our species was listed as *E. speciosa* McGregor, clearly having disregarded available taxonomic opinion, with only McGregor's revision cited, and no comparisons made with Binns et al.'s more recent work (Binns et al., 2002). Interestingly, Zhang et al's results suggested that our species was closer to *E. tennesseensis* (Beadle) Small, but in a clade also containing *E. purpurea* and *E. laevigata* (C.L. Boynton & Beadle) S.F. Blake. This would contradict Binns et al's infrageneric concept, where subgenus *Echinacea* only contained *E. purpurea*.

McGregor (1968a) was first to recognize that amongst *E. pallida* collections with smaller, yellow pollen there was material a generally more robust species with characteristic white pollen. Originally named as *E. speciosa* McGregor, McGregor had overlooked Paxton's much earlier combination of what is now known as *Rudbeckia speciosa* Wender (see Paxton, 1848). A new name, *E. simulata* McGregor, was proposed (McGregor, 1968b) when the error was pointed out.

Binns et al. (2002) considered that McGregor's taxon was simply a variant of *E. pallida* and combined it under that species, apparently guided by the type of indumentum, but with the net result that *E. pallida* became a very broad concept species including *E. tennesseensis*, *E. simulata*, *E. sanguinea* and *E. angustifolia*, alongside typical *E. pallida* – a rather disparate group of plants, both morphologically and alongside the phylogenetic results proposed by Zhang et al. (2017). The most recent treatment of the genus, in the *Flora of North America* (Urbatsch et al., 2006) essentially followed McGregor's.

CULTIVATION

Echinacea simulata is a particularly striking summer-flowering species, not least because of the long, drooping slender pink ray limbs. The species does well as fresh cut flowers, which usually have a reasonable vase life of between one and two weeks. Without the rays the receptacle can last for a lot longer, and dried mature capitula, of just the receptacle, are also useful in dried flower arrangements. Post-flowering capitula can be cut from the source plant/s and dried (hanging upside down) in an airy place (to avoid fungal growth amongst the paleae) and used when needed.

It is a hardy species, at least throughout the UK (H5 – −15°C to −10°C), and USDA hardiness zones of 4–8 in the United States. It is tolerant of most soils, most pHs on well-drained soil, when grown in full sun, although there are frequent references to it preferring calcareous soil. As a simple-stemmed, moderately short-lived plant, mass plantings amongst grasses and similar height plants can make a striking contrast, but edge planting appears to work well in the Wakehurst plantings, and amongst shorter plants the effect of the massed capitula and their drooping rays is quite mesmerizing and ethereal.

Propagation. Routine propagation of *Echinacea* is by sowing seeds/achenes following cold moist stratification. Hind (2023[2024]: 387) has outlined this, but it is worth repeating the



PLATE 1164 *Echinacea simulata* DEBORAH LAMBKIN

details, together with adding dry stratification. Division of established plants is also a guaranteed method, but cuttings less so.

Cold moist stratification. Ripe achenes require 4–6 weeks treatment to break their dormancy and improve germination; this method effectively mimics overwintered achenes under a layer of soil or snow. The achenes should be sown (in the autumn or early winter) onto the surface of a damp (but not soaking wet) proprietary seed compost mix in pots or trays and covered with a thin layer of grit or vermiculite. The containers should then be bagged and placed in a fridge or other cold location for between four and six weeks. If the achenes begin to germinate, remove the containers, bag-free, to a bright warm place. When the seedlings are large enough to handle, they can be potted on, keeping them moist all the time. Alternatively, the achenes can be sown in the spring, provided they have been stratified. The achenes can be mixed with moist sand and stored in the fridge for about 60 days before sowing. The achene/sand mix can be spread into the plants' final growing positions as some species suffer from root disturbance.

Dry stratification. In general, ripe achenes can be pre-treated by subjecting them to cold (of c. 0°C) for a month or more (typically between 30 and 60 days). Dry achenes can be stored in sealable plastic bags in a fridge, or in a rodent-proof container (typically a storage tin) in an unheated building (outhouse, shed, etc.) over winter depending upon the species. The achenes can then be sown directly into prepared ground in their final growing position/s or, for those species that don't mind disturbance, the achene/sand mix can be sown in pots or trays and seedlings pricked out when they're large enough to handle.

Cuttings & Division. For most garden purposes when vegetative reproduction is desirable, division is the best option for established clumps. It can be carried out in the early autumn before the plants shut down completely, or in the spring as plants start into active growth in the warming soil. Basal cuttings taken very early in spring may have some success but will need particular care. Commercial production of *Echinacea* clones is usually by tissue culture.

Pests & Diseases. In common with many other taprooted species, animals prone to eating roots might be looked out for. Whilst gophers might be considered a potential problem in the United States, voles (their nearest equivalent in the UK) could be an issue. However, most herbivorous livestock can eat the young plants and emergent leaves in the spring; keeping an eye open for slugs and snails is likely to be the usual priority. Seed-eating birds (e.g. goldfinches) can also potentially be an issue if propagation from achenes is to be considered. Ideally, several fruiting capitula need to be protected from these seedeaters, either within gauze bags (so that the capitula can mature on the plant) or near-mature capitula removed from the plant and matured in a sunny protected environment. In common with other species of *Echinacea*, *E. simulata* can be prone to powdery mildew. If this occurs in a prairie or border planting it's difficult to eradicate since improving air circulation will often mean removing surrounding plants. If caught early, affected leaves could be removed, but it is something to live with, perhaps increasing the spacing between plants before they start growth the following spring. Optionally, and if caught early, spraying infected plants with a proprietary fungicide might stop the spread. Aster yellows (a phytoplasma-caused disease transmitted by leafhoppers) has also been recorded on *Echinacea simulata*. It often affects the capitula, leaves and general plant growth; since there's no cure, infected plants are best removed and incinerated, since it cannot apparently survive in the soil.

Availability. Container grown plants of *Echinacea simulata* are currently listed by two nurseries by RHS – Find-a-plant (2025), and a quick search suggests that only one seed supplier

also supply seeds of the species in the UK. Plants and seed/achenes are more widely available in the United States, although the images provided suggest they may not be all of the same species.

NOMENCLATURE & DESCRIPTION

Echinacea simulata McGregor, Sida 3(4): 282 (1968b).

Echinacea speciosa McGregor, Trans. Kansas Acad. Sci. 70(3): 366 (1968a), nom. illeg. (later homonym) non (Wender.) Paxton (1848: 79)[= Rudbeckia speciosa Wender.] Type: [U.S.A.:] MISSOURI: Crawford Co.: 4 Mi n Dillard, rocky open bank at edge of woods, June 7, 1960, *R. L. McGregor* 15636 (KANU).' Holotype: KANU.

Echinacea pallida (Nutt.) Nutt. var. *simulata* (McGregor) Binns, B.R. Baum & Arnason, Syst. Bot. 27(3): 629 (2002).

Taprooted herbaceous perennial, plants 60–100(−120) cm tall. Stems usually simple, very rarely branched, green, sometimes purplish, sparsely hispid-hairy or pilose, hairs spreading, eglandular. Leaves sparsely to densely hairy (hairs spreading), basal leaves petiolate, petioles 4–20 cm long, lamina linear to lanceolate, 5–40 cm long × 0.5–4 cm wide, (1-), 3- or 5-veined, moderately hispid-hairy, bases attenuate, margins entire, usually ciliate, apices acute, stem leaves usually sessile, lamina much-reduced, bases attenuate. *Inflorescences* of solitary terminal capitula on few-bracted stipes, ultimate peduncle 20–40+ cm long. *Capitula* heterogamous and radiate, disc conical to hemispherical, 20–30 mm tall× 20–30 mm diam.; phyllaries 3–4-seriate, lanceolate to ovate, 7–15 mm long × 1.5–3.5 mm wide; receptacle conical, solid, paleaceous, paleae (8–)10–14 mm long, apices c. 2–3 mm long, pinkish to purple, incurved, sharp-pointed. *Ray florets* uniseriate, neuter, ray limb drooping to reflexed, 40–90 mm long × 4–7 mm wide, glabrous or sparsely hairy abaxially (conspicuously so towards base), purplish-pink, rose to pink or white. *Disc floret* ∞, hermaphrodite, corollas 5–6.5 mm long, corolla lobes sparsely pubescent, pink to purplish; pollen yellow. *Achenes* tan, 3–4.5 mm, body smooth, usually glabrous, sometimes hairy (in some ray florets); *pappus* coroniform, shallowly lobed, c. 1 mm tall (usually without major teeth). n = 11 (McGregor, 1968a; 366); 2n = 22 (Figure 1).

Distribution. United States of America (Alabama, Arkansas, Georgia, Illinois, Indiana, Kentucky, Missouri, Tennessee). Note: the species is sometimes considered introduced into Illinois (see NatureServe, 2025).

Habitat & Ecology. Rocky wooded hillsides, mixed open woodland (both conifer and hardwood), glades, barrens and prairies (including coastal valleys); 100–400 m.

Etymology. The generic name, *Echinacea* is derived from the Greek ἐχῖνος (ekhinos) = hedgehog; the specific epithet from the Latin *simulata* = imitating or resembling. The earlier specific epithet for this taxon, *speciosa* (= showy, splendid) was perhaps more apt.

Phenology. Flowering May–August (–September).

Conservation status. The NatureServe conservation status for *Echinacea simulata* is given as 'G4' (= Apparently Secure) (NatureServe, 2025), but State by State the species is sometimes considered 'Imperiled' (Georgia, Tennessee), 'Critically Imperiled' (Alabama), or Vulnerable (Kentucky), or is unranked. However, a number of potential threats have been listed where State Conservation Status is listed, suggesting fire suppression leading to increased

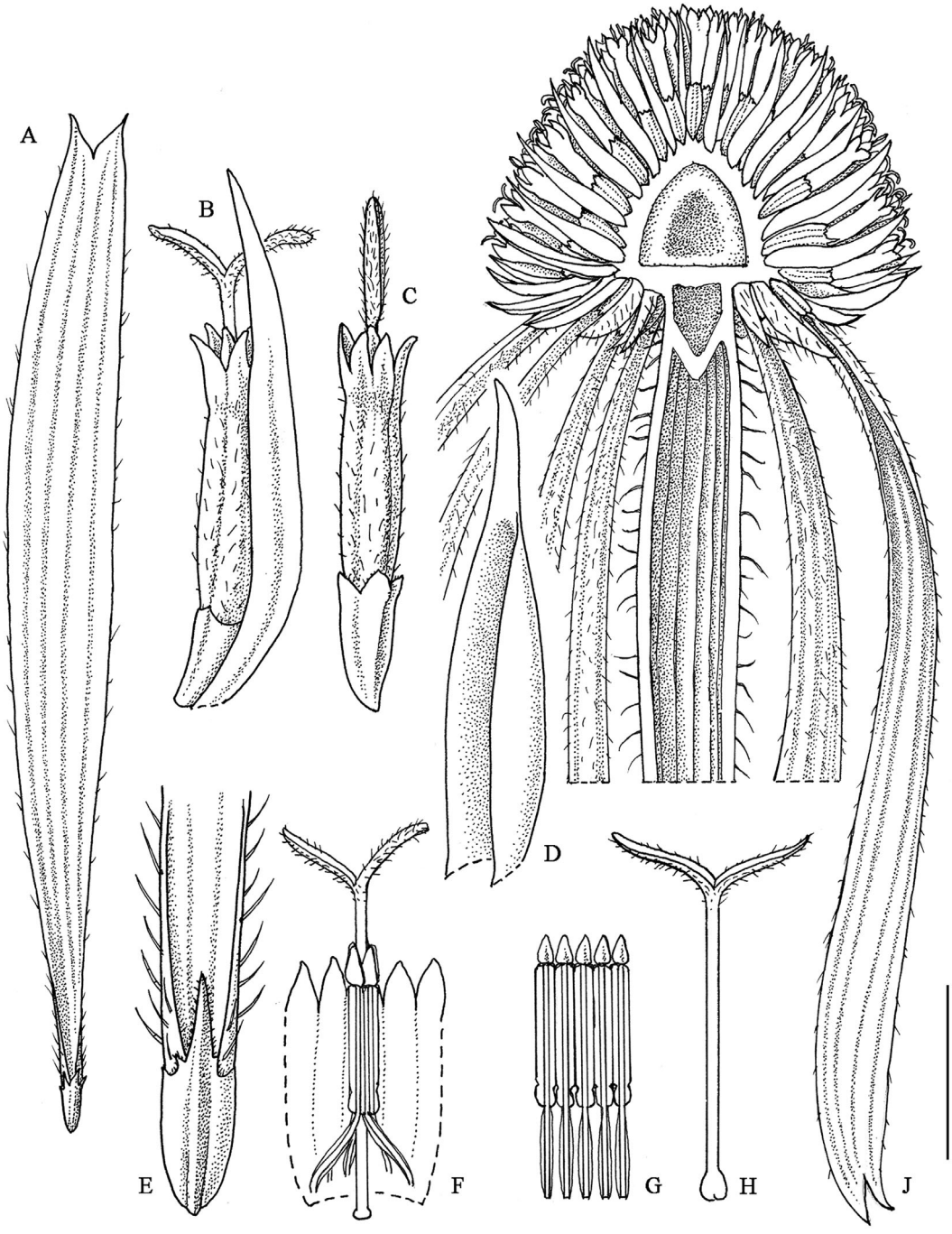


FIGURE 1 *Echinacea simulata*. A, ray floret; B, disc floret and accompanying palea; C, disc floret; D, palea; E, ray floret achene (immature) and base of ray limb; F, disc floret corolla opened out, showing attachment points of anther filaments; G, anther cylinder, opened out; H, disc floret style. J, l.s. flowering capitulum showing fistulose pedicel, solid conical receptacle and drooping ray floret limbs. Scale bars: B–H = 5 mm; A, J = 15 mm. Drawn by Deborah Lambkin from material (Accession No. 2020-137*1) growing in the North American Prairie plantings at Royal Botanic Gardens, Kew at Wakehurst Place

competition and canopy closure, herbicide use on railways, and road margins, and increased recreational use of many areas of hill prairies and barrens, etc. Confusion with the three constituent species of *Echinacea* (*E. purpurea*, *E. pallida* and *E. angustifolia*) has also led to digging up of plants and over-collection of achenes for medicinal purposes, this leading to population decimation in some areas.

Vernacular names. Glade Coneflower, Glade Purple Coneflower, Pale Purple Coneflower, Prairie Purple Coneflower, Wavyleaf Coneflower, Wavyleaf Purple Coneflower (Missouri Botanical Garden – Plant Finder (2025)).

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