

# Three new records to the flora of United Arab Emirates: *Dactyloctenium australe* Steud. (Poaceae) and two varieties of *Neurada procumbens* L. (Neuradaceae)

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## ABSTRACT

Based on our recent field surveys, three new records, that had not previously been recorded in flora of the United Arab Emirates (UAE) were discovered. The new records are *Dactyloctenium australe* Steud. (Poaceae) recorded from Al Bidiyah in Fujairah, and two varieties of *Neurada procumbens* L. (Neuradaceae), namely, *N. procumbens* var. *stellata* and *N. procumbens* var. *al-eisawii*, from Hamdah and Al Dhaid area in Sharjah. Detailed morphological examination of these species was carried out and brief descriptions, phenology, photographs, and distribution map is provided.

## KEY WORDS

*Dactyloctenium australe*; *Neurada* varieties; new records; United Arab Emirates.

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## INTRODUCTION

The genus *Dactyloctenium* Willd. (Poaceae) comprises of some 13 species worldwide, and the native range of the genus is Africa, tropical and subtropical Asia to Australia (Bor et al. 1970; Landge et al., 2021; POWO, 2023). In the United Arab Emirates (UAE), the genus is represented by three species, namely: *D. aegyptium* (L.) Willd., *D. aristatum* Link and *D. scindicum* Boiss. (Jongbloed et al., 2003; Karim & Fawzi, 2007; Sharjah Seed Bank and Herbarium - SSBH, unpublished data), and the delineation of some of these taxa sometimes poses challenges for field researchers.

The genus *Neurada* L. (Neuradaceae) is documented as a monotypic within the flora of UAE, comprising the species *N. procumbens* L. It exhibits a wide distribution and is commonly found

growing in sand plains and compacted sand (Jongbloed et al., 2003; Karim & Fawzi, 2007; Mahmoud et al., 2018). Zohary (1966) recognized two varieties of *N. procumbens*, namely, var. *procumbens* and var. *stellata*. *Neurada al-eisawii* was reported as a new species by Barsotti et al. (2000), but Turki (2007) reidentified it as a variety under *N. procumbens*, rather than considering it a distinct species.

Behery (2019) reassessed the relationships between different taxa within the genus *Neurada* in Saudi Arabia, and three distinctive varieties, namely, var. *procumbens*, var. *al-eisawii*, and var. *stellata* were identified, of which the latter two varieties were newly registered in the Flora of Saudi Arabia. The distinguishing features include circular fruit with an adaxial surface for var. *procumbens*, pentagonal fruit with branched spines for var. *al-eisawii*, and pentagonal fruit

with unbranched spines for var. *stellata* (Behery, 2019).

The detection of previously undocumented plant species or varieties is always significant as it contributes to our understanding of the biodiversity and ecology of the region. Here we report three new additions for the flora of the UAE.

## MATERIAL AND METHODS

The present work is based on plant exploration surveys during 2023-2024 in the UAE. During our recent field excursions, samples of a grass were collected from Al Bidiyah (Fujairah) and different shaped fruits of *Neurada*, including sample plants from each population from Al Dhaid, Wishah and Hamdah (Sharjah) were collected for morphological assessment (Fig. 1). Thorough morphological examination of specimens and consultation of the relevant literature (Jongbloed et al. 2003; Karim & Fawzi, 2007) revealed that the grass is *Dactyloctenium australe* (Figs. 2–4) and two varieties of *Neurada* are var. *stellata* and var. *al-eisawii*. In addition, *Neurada procumbens* is recognized as *Neurada procumbens* var. *procumbens* (Figs. 5–7). The identified specimens were also cross-referenced with digitized specimens from various herbaria available online for confirmation of their identity.

We found no previous literature reference regarding the occurrence of *D. australe*, *N. procumbens* var. *stellata* nor var. *al-eisawii* in the UAE. Therefore, we have documented them as new additions to the UAE flora. To gain a clear understanding of fruit production in *Neurada*, we studied plants during the growing season to explore whether a single plant produces different types of fruits or if different plants yield distinct fruits. Our observations confirmed that different plants produce distinct fruits (Figure 3). The identified specimens were deposited at the SSBH.

## RESULTS AND DISCUSSION

The specimens of *D. australe*, *N. procumbens* var. *stellata* and var. *al-eisawii* collected by the authors have been recorded for the first time from UAE. The following are brief description and

distribution map (Fig. 1) of the newly recorded plants in UAE, along with information about their habitat and associated species.

### *Dactyloctenium australe* Steud.

COMMON NAMES. Durban grass, Natal crowfoot sweet, smother grass.

DESCRIPTION. Stoloniferous mat-forming perennial, culms erect or geniculately ascending; 35–80 cm high; rooting from lower nodes; stolons wiry, flattened; leaf 5–25 cm long and 2.5–4.5 mm wide, ligulate, blade surface pilose, hairy on both sides, apex acuminate; inflorescence digitate, 2–5 spikes (the majority of specimens in our studied population had two spikes); spikes 2–4 cm long, ending in a sterile rachis tip; spikelets elliptic-oblong, 4–5 mm long, 4–6-flowered.

FLOWERING AND FRUITING. Observed in UAE: March to May.

ASSOCIATED SPECIES. *Aeluropus lagopoides* (L.) Trin. ex Thwaites (Poaceae), *Sporobolus spicatus* (Vahl) Kunth. (Poaceae), *Sesuvium verrucosum* Raf. (Aizoaceae), and *Suaeda aegyptiaca* (Hasselq.) Zohary (Amaranthaceae).

HABITAT. Disturbed and irrigated areas in Gardens and Plantations.

DISTRIBUTION. This species is native to South Africa, Madagascar, Mozambique, Namibia, and Tanzania, introduced to Australia. In UAE, it is recorded in Fujairah (Al Bidiyah).

### *Neurada procumbens* L. var. *stellata* M. & D. Zohary

DESCRIPTION. Annual herb, densely tomentose, stems prostrate up to 37 cm long; root up to 26 cm long; leaves 2–3.8 cm long (including petioles), 0.9–2.2 cm wide, oblong-ovate, pinnatilobed, lobes obtuse, densely hairy; flowers with white petals; fruit dry, plano-orbicular, pentagonal, 2.2–2.8 cm diameter, 10 carpels, partly connate, each one-ovuled, fruit margins deeply 5-lobed, each lobe with 2–3 spines (unbranched spine). Fruits persisting as a collar around the young roots of the seedlings even after the plant is fully grown; seeds curved, without endosperm.

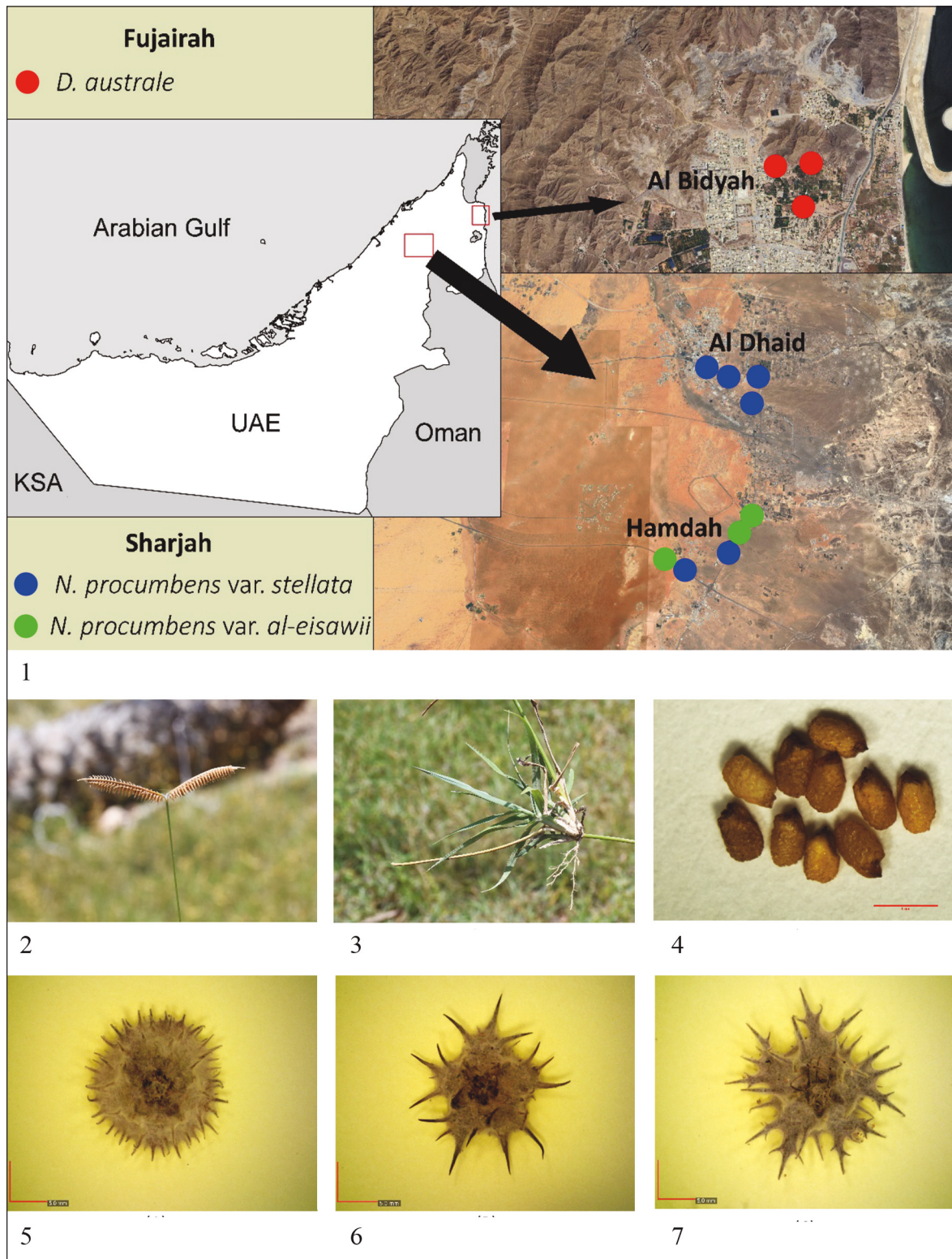


Figure 1. Distribution records of *D. australe*, *N. procumbens* var. *stellata* and var. *al-eisawii* in United Arab Emirates (UAE). Figures 2–4. *Dactyloctenium australe*. Fig. 2: inflorescence. Fig. 3: stolon, rooting node. Fig. 4: seeds. Figures 5–7. Fruit types of *Neurada*. Fig. 5: *N. procumbens* var. *procumbens*. Fig. 6: *N. procumbens* var. *stellata*. Fig. 7: *N. procumbens* var. *al-eisawii*.

FLOWERING AND FRUITING. Observed in UAE: January to April.

HABITAT. Gravel and sand plains.

ASSOCIATED SPECIES. *Neurada procumbens* var. *procumbens*, *Tragus racemosus* (L.) All. (Poaceae) *Senna italica* Mill. (Fabaceae), and *Arnebia hispidissima* (Lehm.) A.DC. (Boraginaceae).

DISTRIBUTION. Recorded in Jordan, Palestine, Egypt and Saudi Arabia. In the UAE, it is recorded in Sharjah (Hamda, Al Dhaid and Weshah).

*Neurada procumbens* L. var. *al-eisawii* (Barsotti, Borzatti & Garbari) - Turki (2007) *comb. nova*

SYNONYM. *Neurada al-eisawii* Barsotti, Borzatti & Garbari

DESCRIPTION. Annual herb, densely tomentose, stems prostrate up to 46 cm long; root up to 22 cm long; leaves whitish green, 2.5–3.9 cm long (including petioles), 1–1.4 cm wide, oblong-ovate, pinnatifid, lobes obtuse, densely hairy; flowers with white petals; fruit with external obvious patent branched spines that are prickled at the base, pentagonal, 1.9–2.6 cm diameter, 10 carpels, partly connate, each one-ovuled, fruits persisting as a collar around the young roots of the seedlings even after the plant is fully grown; seeds curved, without endosperm.

FLOWERING AND FRUITING. Observed in UAE: January to April.

HABITAT. Gravel and sand plains, sandy dunes.

ASSOCIATED SPECIES. *Limeum arabicum* Friedrich (Molluginaceae), *Indigofera intricata* Boiss. (Fabaceae), *Cyperus conglomeratus* Rottb. (Cyperaceae), and *Tribulus arabicus* Hosni (Zygophyllaceae).

DISTRIBUTION. Recorded in Jordan, Palestine, Egypt and Saudi Arabia. In the UAE, it is recorded from Sharjah (Al Dhaid, Maleha and Hamda).

## CONCLUSIONS

This study added three new records to the flora

of UAE, enhancing our understanding of plant diversity and distribution through continuous field exploration in the country. We have presented the first report on the fruit morphology of *Neurada* in the UAE flora. This emphasizes the significance of fruit morphological characters as distinctive traits for plant identification. Our initial observations provide valuable insights for future investigations into *Neurada* fruit morphology and seed germination ecology.

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