Supporting Information

S1. Overview of plant species sampled in this study

Supplementary Table 1. Overview of plant species sampled in our study. Details for each species include family, sample location, nectar sugar production per flower and per floral unit (µg/day) and whether the species were measured by Baude et al. (2016).

Species	Family	Sample location	Nectar sugar production per flower in µg/day	Nectar sugar production per floral unit in µg/day	Measured in Baude et al. (2016)
Achillea millefolium	Asteraceae	Greenhouse	12.6	1234.6	X
*Centaurea jacea**	Asteraceae	Dike grasslands	183.1	3517.9	X
Centaurea scabiosa	Asteraceae	Dike grasslands	355.5	8677.1	
Crepis biennis	Asteraceae	Dike grasslands	47.4	2748.7	
Crepis capillaris	Asteraceae	Greenhouse	31.6	1238.1	X
Heracleum sphondylium	Apiaceae	Dike grasslands	97.4	1632.5	X
Knautia arvensis	Caprifoliaceae	Dike grasslands	254.6	15367.9	X
Leucanthemum vulgare	Asteraceae	Dike grasslands	11.3	1020.1	X
Medicago lupulina	Fabaceae	Greenhouse Dike grasslands	4.5 3.8	67.8 40.5	X
Rhinanthus alectorolophus	Lamiaceae	Dike grasslands	244.7	244.7	
Tragopogon pratensis subsp. pratensis	Asteraceae	Dike grasslands	24.2	1162.7	
Trifolium dubium	Fabaceae	Dike grasslands	0.0	0.0	X
Trifolium pratense	Fabaceae	Greenhouse Dike grasslands	40.7 44.9	4273.6 1879.7	X
Vicia sativa subsp. angustifolia	Fabaceae	Dike grasslands	168.5	168.5	X
Vicia sepium	Fabaceae	Dike grasslands	1106.3	1106.3	X

*_Centaurea jacea_ measured in our study and _Centaurea nigra_ measured by Baude et al. (2016) were treated as a single species

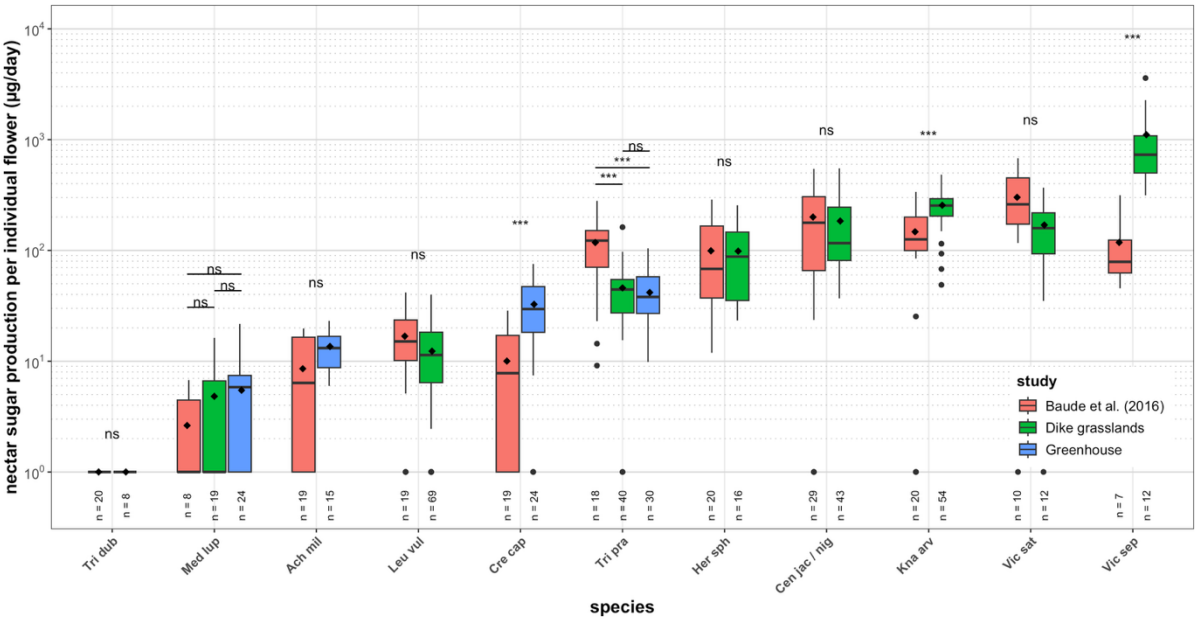
12 **S2. Species-specific sampling procedures**

13 **Supplementary Table 2.** Details on (i) the nectar extraction procedure and (ii) how the number of
14 flowers per floral units was counted or estimated for each of the 15 study species.

Species	Nectar extraction method	Floral unit quantification
Achillea millefolium	To reach individual disk flowers, pollen was removed with tweezers prior to rinsing. Each flower was rinsed twice with 1 µL distilled water for 1 minute. The diluted nectar was collected with 1 µL microcapillaries.	The number of open disk flowers was estimated by counting them with a magnifying glass.
Centaurea jacea	Nectar was collected with 1 µL microcapillaries. On average, 1.88 (range 1-4) disk flowers per capitulum were used to obtain sufficient nectar for quantification.	The number of open disk flowers was estimated by counting them.
Centaurea scabiosa	Nectar was collected with 1 µL microcapillaries. On average, 1.19 (range 1-5) disk flowers per capitulum were used to obtain sufficient nectar for quantification.	The number of open disk flowers was estimated by counting them.
Crepis biennis	Individual fertile ray flowers were rinsed twice with 1 µL distilled water for 1 minute. Nectar was collected with 1 µL microcapillaries.	The number of fertile ray flowers was estimated by counting them.
Crepis capillaris	Individual fertile ray flowers were rinsed twice with 1 or 2 µL distilled water for 1 minute. Nectar was collected with 1 or 2 µL microcapillaries.	The number of fertile ray flowers was estimated by counting them.
Heracleum sphondylium	Individual flowers were rinsed twice with 1 µL distilled water for 1 minute. Nectar was collected using 1 µL microcapillaries.	The number of open flowers per secondary umbel was estimated by counting them.
Knautia arvensis	Nectar was collected with 1 µL microcapillaries. On average, 1.09 (range 1-3) flowers per floral unit were used to obtain sufficient nectar.	The number of open flowers was estimated by counting all open flowers in ¼ of the floral unit and multiplying it by four.

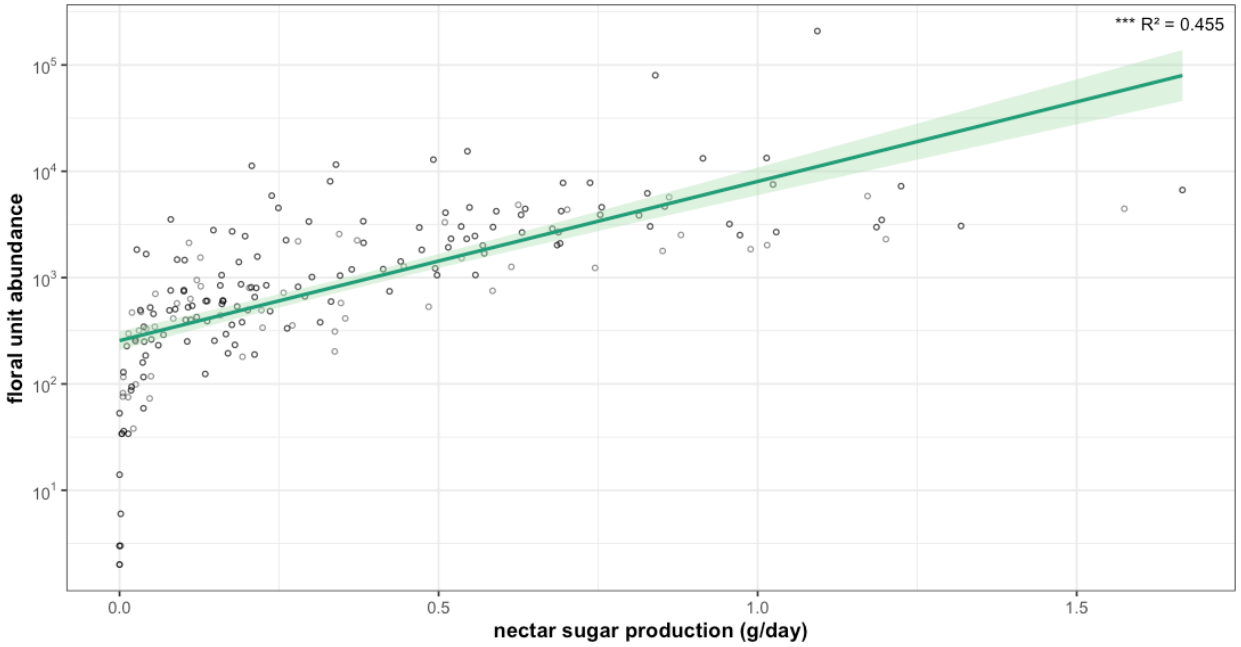
Leucanthemum vulgare	To reach individual disk flowers, pollen was removed with tweezers prior to rinsing. Each flower was rinsed twice with 1 µL distilled water for 1 minute. The diluted nectar was collected with 1 µL microcapillaries.	The number of open disk flowers was estimated by counting all open flowers in ¼ of yellow capitulum centre and multiplying it by four.
Medicago lupulina	Individual flowers were rinsed twice with 1 µL distilled water for 1 minute. Nectar was collected with 1 µL microcapillaries.	Open flowers were counted with a magnifying glass.
Rhinanthus alectorolophus	Flowers were rinsed twice with 2 µL distilled water for 1 minute. Nectar was collected with 2 µL microcapillaries.	A single flower was regarded as the floral unit.
Tragopogon pratensis subsp. pratensis	Individual fertile ray flowers were rinsed twice with 1 µL distilled water for 1 minute. Nectar was collected with 1 µL microcapillaries.	The number of fertile ray flowers was estimated by counting them.
Trifolium dubium	Individual flowers were rinsed twice with 1 µL distilled water for 1 minute. Nectar was collected with 1 µL microcapillaries.	Open flowers were counted with a magnifying glass.
Trifolium pratense	Nectar was collected with 1 µL microcapillaries. On average, 7.09 (range 3-12) flowers per raceme were used to collect sufficient nectar.	The number of open flowers was estimated by counting them.
Vicia sativa subsp. angustifolia	Nectar was collected with 1 µL microcapillaries.	A single flower was regarded as the floral unit.
Vicia sepium	Nectar was collected with 2 µL microcapillaries.	A single flower was regarded as the floral unit.

S3. Nectar sugar production per flower across species and studies



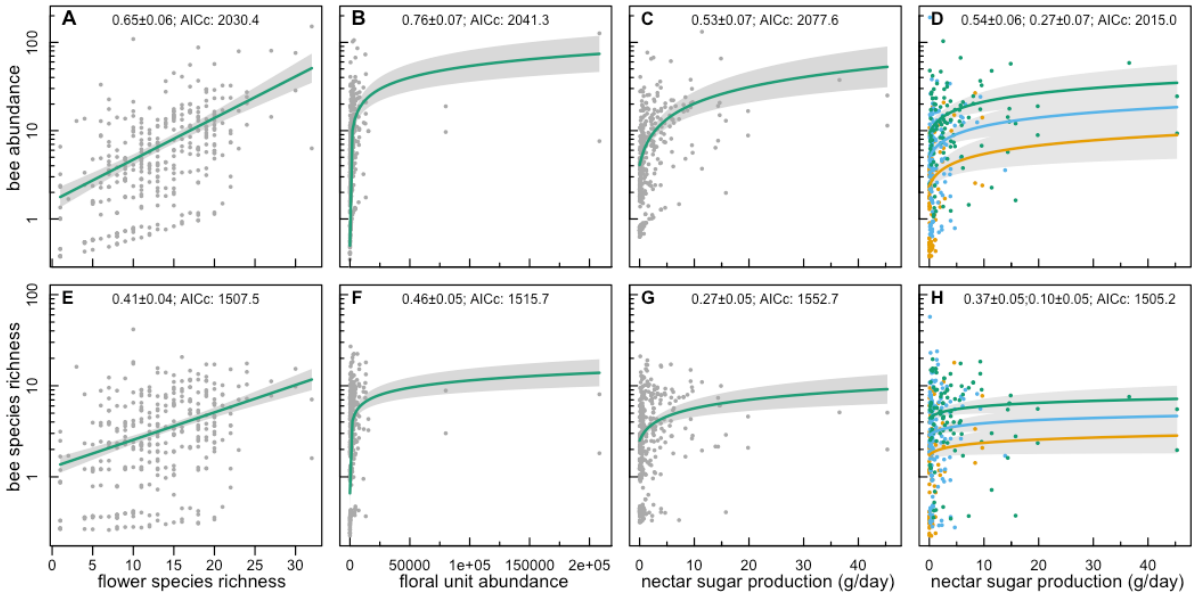
Supplementary Figure 1. Nectar sugar production per individual flower across species and studies. Boxplots show nectar sugar production per flower for Baude et al. (2016) and our greenhouse and dike grassland measurements. The diamond-shaped dots represent species mean values. Sample sizes (n) are indicated for each species. Statistical significance between studies within species is denoted by: *** ($p \leq 0.001$), ** ($p \leq 0.01$), * ($p \leq 0.05$) and ns ($p > 0.05$). Note that the y-axis has been log10-transformed

S4. Relationship between nectar sugar production and floral unit abundance



Supplementary Figure 2. Linear relationship between the $\log_{10}(x+1)$ floral unit abundance and $\log_{10}(x+1)$ nectar sugar production (g/day across our transects). R^2 represents the R-squared value, $p < 0.05$

S5. Relationship between floral metrics and bee abundance and species richness (non-cropped)



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56 **Supplementary Figure 3.** Relationship between bee abundance and species richness along flower
57 species richness (A, E), floral unit abundance (B, F) and nectar sugar production (g/d; C, G) and their
58 interaction (D, H), with 95% confidence intervals. Graphs are made using the r package visreg,
59 displaying partial residual plots that illustrate the relationship between the response variables and the
60 independent variables, while also accounting for the effects of other independent variables (Julian
61 date and sample location) in the models. Note the $\log_{10}$ transformation for the y-axis. For each model,
62 the estimate ± SE and AICc values are given. In panel D and F, the lines give the predicted bee
63 abundance and species richness along nectar sugar production for three different levels of flower
64 species richness: 5 (orange), 13 (blue) and 20 (green).

65 **References**

66 Baude, M., Kunin, W. E., Boatman, N. D., Conyers, S., Davies, N., Gillespie, M. A.,
67 Morton, R. D., Smart, S. M., & Memmott, J. (2016). Historical nectar assessment
68 reveals the fall and rise of floral resources in Britain. *Nature*, *530*(7588), 85-88.
69 https://doi.org/10.1038/nature16532

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