

Supporting Information - Figure Legends

Figure S1: Zinc tolerance groups by shape of zinc response curve. Strains isolated from both the artificial (Wytham, shown in blue) and natural (Snowdonia, shown in red) populations of *Noccaea caerulescens* were grown on KB medium supplemented with a range of zinc concentrations from 0 to 20 mM, and the increase in OD₆₀₀ over 48 hours recorded. Bacterial growth curves were then clustered using k-means clustering into four groups representing different patterns of response to zinc. The average curve for each group is shown in green. Strains in Group 4 were the most tolerant, able to grow at 15 mM (mean IC₅₀ of approx. 14 mM Zn) Zn, while those in Group 1 showed strongly reduced growth even at 5 mM Zn (mean IC₅₀ of approx. 3.5 mM Zn). Numbers of strains in each group are shown in parentheses.

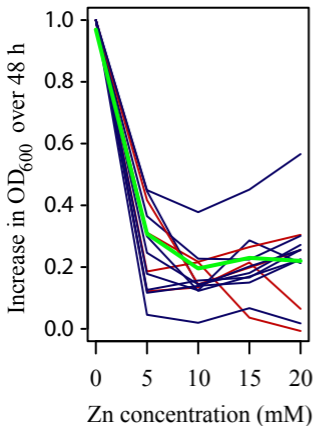
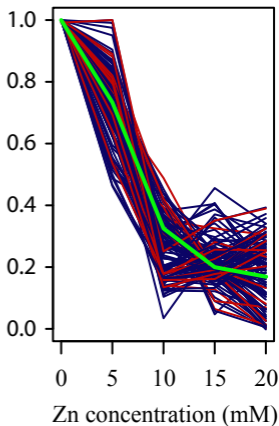
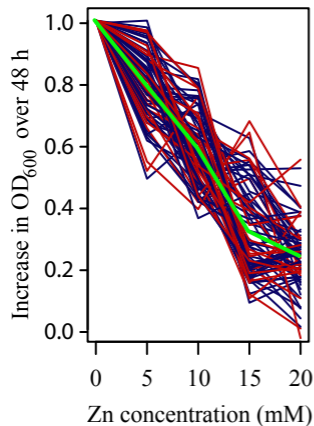
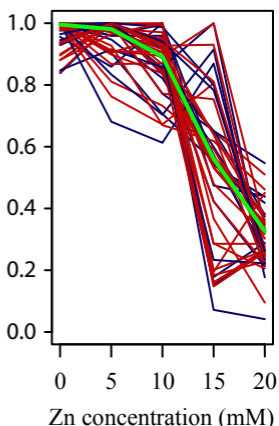
Figure S2: Proportion of *Pseudomonas* strains isolated from the leaves of artificial (Wytham) population (A) and natural (Snowdonia) population (B) of *Noccaea caerulescens*, by species. Species designations are based on top BLAST hits for *rpoD* genes.

Table S1: Primers used to amplify and sequence *16S*, *gyrB* and *rpoD* genes of isolated endophytes.

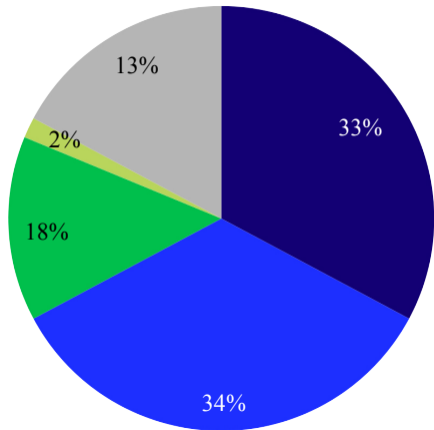
Table S2: GenBank ID numbers of reference *rpoD* sequences used in the creation of the phylogenetic tree in Figure 2.

Table S3: Identity of bacterial strains causing disease symptoms when inoculated into *Noccaea caerulescens*, according to BLAST search using the 16S, *rpoD* and *gyrB* gene sequences. *N. caerulescens* plants were grown on 10 μ M Zn (low zinc) and strains were suspended in 10 mM MgCl₂ at approximately 10⁶ cfu/ml for inoculation.

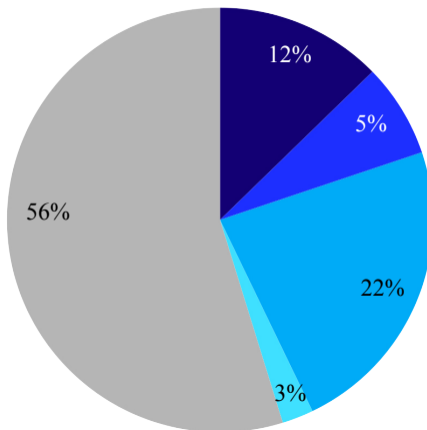
Table S4: Symptoms recorded at 72 hours post inoculation (hpi). Bacteria were inoculated into 10-week-old plants at 10⁶ cfu/ ml in 10 mM MgCl₂ and plants scored at 72 hpi for watersoaking, chlorosis or necrosis.

Group 1 ($n = 14$)Group 2 ($n = 106$)Group 3 ($n = 74$)Group 4 ($n = 46$)

Snowdonia



Wytham



- fluorescens
- syringae
- graminis
- clemancea
- aeruginosa
- putida
- species unknown

16S

rpoD***gyrB***

Forward

ccagccatgccgcgtgtg

caggtggaagacatcatccgcatg

tcbgcrvcvargtsatcatgac

Reverse

cgtactccccaggcggtc

ccgatgttgccttcctggatcag

ttgtcyttgggtctgsgagctgaa

Sequencing primer

ccagccatgccgcgtgtg

gygaaggcgaratygraatcg

ttgtcyttgggtctgsgagctgaa

Reference Strain	GenBank ID
<i>P. fluorescens</i> PfO-1	CP000094.2
<i>P. fluorescens</i> Pf-5	DQ458678.1
<i>P. fluorescens</i> SBW25	AM181176.4
<i>P. graminis</i> LMG 21611T	FN554469.1
<i>P. syringae</i> pv. phaseolicola 1448A	CP000058.1
<i>P. syringae</i> pv. phaseolicola B728a	AY610926.2
<i>P. syringae</i> pv oryzae 1_6	FN433254.1
<i>P. syringae</i> pv. tomato DC3000	EU296593.1
<i>P. syringae</i> pv. tomato T1	EU296597.1
<i>P. aeruginosa</i> PAO1	AE004091.2
<i>P. aeruginosa</i> LESB58	FM209186.1
<i>P. aeruginosa</i> 2192	AAKW01000060.1
<i>P. aeruginosa</i> PA14	CP004055.1
<i>P. aeruginosa</i> PACS2	AAQW01000001.1
<i>P. aeruginosa</i> PA7	CP000744.1
<i>P. aeruginosa</i> C3719	AAKV01000073.1
<i>P. mendocina</i> ymp	CP000680.1
<i>Azotobacter vinlandii</i> DJ	CP001157.1
<i>P. stutzeri</i> A1501	CP000304.1
<i>Acinetobacter</i> ADP1	CR543861.1
<i>Hahella chejuensis</i> KCTC 2396	CP000155.1

Strain	<i>16S</i> - top BLAST hit	Accession No.	<i>rpoD</i> - top BLAST hit	Accession No.	<i>gyrB</i> - top BLAST hit	Accession No.
E1	<i>Pseudomonas</i> sp.	KF147105.1	<i>P. syringae</i> pv. tomato DC3000	AE016853.1	<i>P. graminis</i> strain LMG 21611T	FN554187.1
G1	<i>Pseudomonas</i> sp.	KF147105.2	<i>P. syringae</i> pv. tomato DC3000	AE016853.2	<i>P. graminis</i> strain LMG 21611T	FN554187.0
C2	<i>Pseudomonas</i> sp.	KF147105.3	<i>P. syringae</i> pv. tomato DC3000	AE016853.3	<i>P. graminis</i> strain LMG 21611T	FN554187.1
D3	<i>Pseudomonas thivervalensis</i>	GQ169380.1	<i>P. graminis</i> strain LMG 21611T	FN554469.1	<i>P. graminis</i> strain LMG 21611T	FN554187.2
A4	Uncultured <i>Pseudomonas</i> sp.	AM398402.1	<i>P. marginalis</i> HRI 95	AB039544.1	<i>Pseudomonas</i> sp. R-42091	HE603575.1
D4	<i>Pseudomonas</i> sp. BT1(2013)	KF465830.1	<i>P. graminis</i> strain LMG 21611T	FN554469.1	<i>P. graminis</i> strain LMG 21611T	FN554187.2
A8	<i>Pseudomonas</i> sp. R5SpM3P1C1	KF147105.3	<i>P. syringae</i> pv. tomato DC3000	AE016853.3	<i>P. rhizosphaerae</i> LMG 21640T	FN554224.1
C8	<i>Pseudomonas</i> sp. BT1(2013)	KF465830.1	<i>Pantoea vagans</i> C9-1	CP002206.1	<i>Rhodococcus erythropolis</i>	AB018752.1
G8	Uncultured bacterium	FN813929.1	<i>P. marginalis</i> HRI 95	AB039544.1	<i>Citrobacter</i> sp. AQ-2	AF005699.1
C10	<i>Pseudomonas</i> sp. R5SpM3P2C6	KF146995.1	<i>P. cannabina</i> pv. alisalensis R-1	AB781105.1	<i>P. syringae</i> CFBP5010	JN190428.1
B11	Uncultured bacterium	JQ047724.1	<i>P. syringae</i> pv. syringae UMAF6024	JX867788.1	<i>P. syringae</i> pv. syringae UPN340	KC852143.1
C11	Uncultured bacterium	JQ047463.1	<i>P. graminis</i> strain LMG 21611T	FN554469.1	<i>P. graminis</i> strain LMG 21611T	FN554187.1
F11	<i>Pseudomonas</i> sp. BT1(2013)	KF465830.1	<i>Pantoea vagans</i> C9-1	CP002206.1	<i>Rhodococcus erythropolis</i>	AB018752.1

Strain	<i>N. caerulescens</i> symptoms at 72 hpi
E1	Chlorosis; Necrosis
G1	Chlorosis; Necrosis
C2	Chlorosis; Necrosis
D3	Mild Chlorosis; Necrosis
A4	Chlorosis; Necrosis
D4	Chlorosis; Necrosis
A8	Chlorosis; Necrosis
C8	Necrosis
G8	Necrosis
C10	Chlorosis; Necrosis
B11	Chlorosis; Necrosis
C11	Necrosis
F11	Necrosis