CRC for Water Sensitive Cities

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Project C4.1
Integrated multi-functional urban water systems

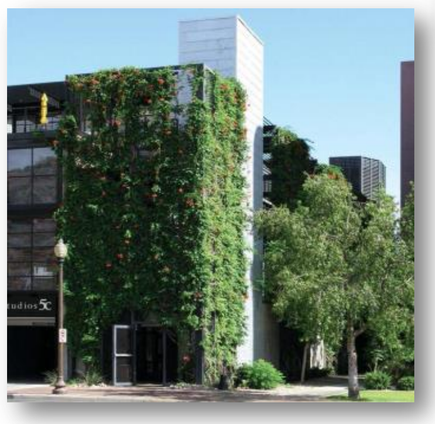
Use of ornamental plants in greywater biofilters

Green urban water technologies make use of plants to accomplish treatment via natural processes

Plant selection

- Ability to grow well in sandy soils
- Good nutrient demand
- Moderate to fast growth rate
- Good aesthetical trait
- Preference for wet, damp soil environments, etc

Biofilters



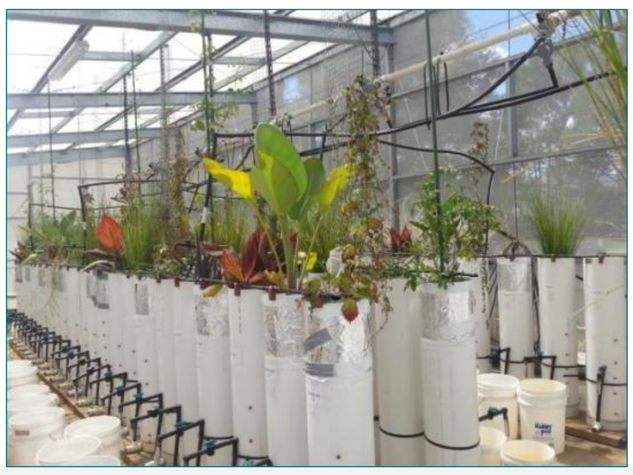
Living walls *(ground structure similar to biofilters)*

Plants' multiple functions

- Water purification
- Beautification of surrounding environment
- City cooling
- Amenity improvement
- Maintenance of system's hydraulic capacity

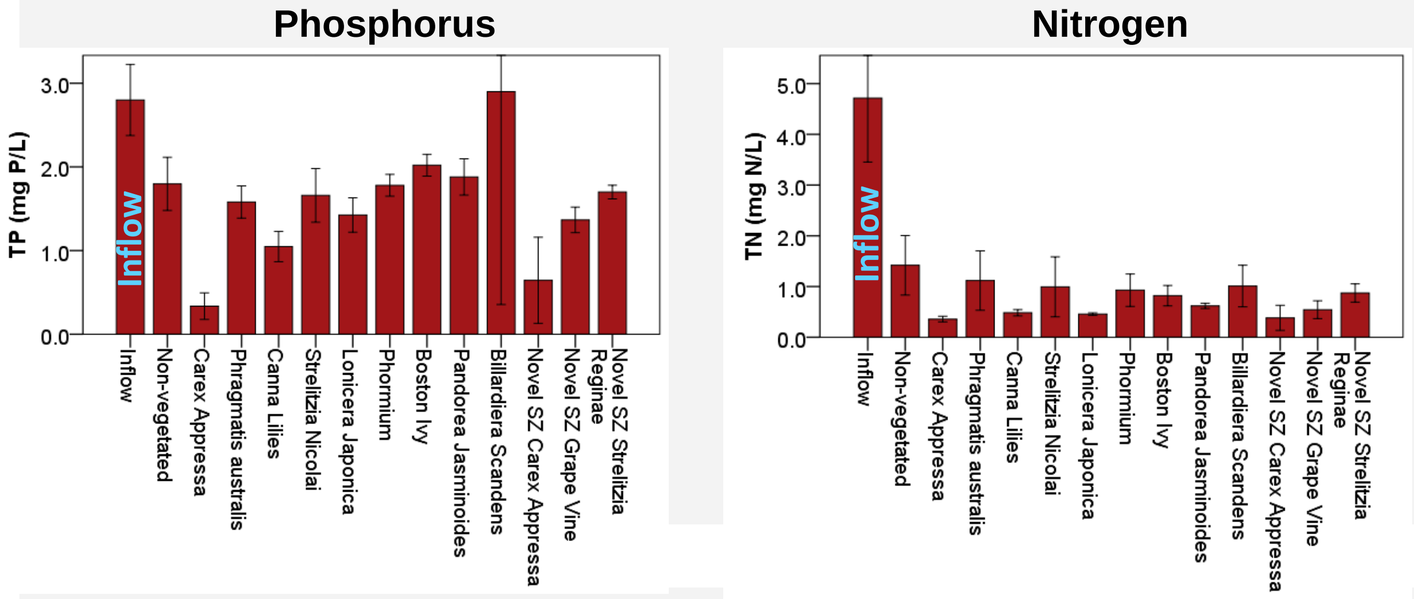
Native species have been used in biofilters so far, would use of ornamentals entail a similar pollutant removal capacity?

Laboratory column study



4 climbing plants & 5 lower storey ornamentals tested.
Columns were dosed with synthetic bathroom greywater for 7 months.

Nutrient removal performance



- Traditional biofilter plant (*Carex App*.) columns removed 89% P and 93% N.
- Ornamental plants → high nitrogen removal (76-91%)
  → Phosphorus removal (33-65%, excl. *Billardiera*) highly dependent on type of ornamental species

Ornamentals (selected) can be used as effective species for nutrient removal in biofilters

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