**Supplementary Material**

Supplementary Table 1. Five paired sites in the Free State, South Africa. Category of infestation 1= patch size less than 50 m2, 2 = restricted to a dam or small wetland system (<1 km), 3 = cover large wetland system (>1 km), 4 = cover flowing river system (>1 km). *Ad* = *A. donax, Pa = P. australis.*

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| **Site** | **GPS Point** | **Elevation (m)** | **Distance between reeds stands (km)** | **Coverage scale** | **Surrounding land use** |
|  |  |  |  | ***Ad*** | ***Pa*** |  |
| 1 | 28°43’15S,28°01’29E | 1825 | 0.53 | 1 | 2 | Grazing land |
| 2 | 28°51’10S,27°30’18E | 1645 | 0 | 2 | 2 | Mixed farming |
| 3 | 28°51’31S,27°31’25E | 1611 | 1.1 | 1 | 2 | Mixed farming |
| 4 | 28°42’11S,27°26’40E | 1500 | 0 | 2 | 2 | Crop farming |
| 5 | 28°40’05S,27°25’29E | 1505 | 2.02 | 1 | 4 | Urban |

Supplementary Table 2. Paired sites across South Africa. Category of infestation 1= patch size less than 50 m2, 2 = restricted to a dam or small wetland system (< 1 km), 3 = cover large wetland system (>1 km), 4 = flowing river system (> 1 km). *Ad/*A*= A. donax, Pa/*P *= P. australis, Pm/*M*= P. mauritianus*,KZN = KwaZulu-Natal, WC = Western Cape, FS = Free State, MP = Mpumalanga Provinces.

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| **Site**  | **GPS Point** | **Elevation (m)** | **Distance between** **each reed species (km)** | **Coverage scale**  | **Surrounding land use** |
| ***Ad*** | ***Pa*** | ***Pm*** |
| 1A-KZN | 29°27’28’’S31°13’00’’E  | 22 | - | 0 | 0 | 1 | Sugarcane farming |
| 1M-KZN | 29°27’28’’S31°13’00’’E  | 22 | 0 | 0 | - | 4 | Sugarcane Farming  |
| 2A-KZN | 29°38’47’’S31°07’18’’E  | 10 | - | 0.45 | - | 1 | Sugarcane Farming  |
| 2P-KZN | 29°38’47’’S31°07’18’’E  | 5 | 0.45 | - | - | 4 | Sugarcane Farming  |
| 2M-KZN | 29°42’45’’S31°05’35’’E  | 14 | - | - | - | 3 | Indigenous coastal forest |
| 3A-KZN | 29°33’38’’S31°10’19’’E  | 16 | - | 0.23 | 0.6 | 1 | Sugarcane farming |
| 3P- KZN | 29°33’38’’S31°10’19’’E  | 8 | 0.23 | - | 0.81 | 2 | Sugarcane farming |
| 3M- KZN | 29°33’38’’S31°10’19’’E  | 7 | 0.6 | 0.81 | - | 4 | Sugarcane farming  |
| 4A- KZN | 29°38’41’’S31°03’55’’E  | 21 | 0 | 0 | 0 | 1 | Sewage works |
| 4P- KZN | 29°38’41’’S31°03’55’’E  | 21 | 0 | 0 | 0 | 4 | Sewage works  |
| 4M- KZN | 29°38’41’’S31°03’55’’E  | 21 | 0 | 0 | 0 | 1 | Sewage works  |
| 5A- KZN | 29°28’50’’S31°14’10’’E  | 93 | - | 1.08 | - | 1 | Urban |
| 5P- KZN | 29°28’17’’S31°14’28’’E  | 74 | 1.08 | - | -- | 2 | Abandoned construction site  |
| 5M- KZN | 29°47’48’’S30°57’57’’E  | 60 | - | - | - | 4 | Urban |
| 1A-WC | 34°02’05.64’’S18°21’13.93’’E  | 6 | - | 0 | - | 4 | Urban |
| 1P-WC | 34°02’05.64’’S18°21’13.93’’E  | 6 | 0 | - | - | 4 | Urban |
| 2A-WC | 34°01’24.92’’S18°26’18.85’’E  | 53 | - | 0.09 | - | 1 | Suburban park |
| 2P-WC | 34°01’24.92’’S18°26’18.85’’E  | 51 | 0.09 | - | - | 2 | Suburban park |
| 3A-WC | 33°56’41.89’’S18°53’51.52’’E  | 167 |  | 5.62 |  | 1 | Vineyard |
| 3P-WC | 33°58’33.98’’S18°56’40.24’E  | 273 | 5.62 |  |  | 2 | Nature reserve  |
| 4A-WC | 33°58’30.82’’S18°47’07.84”E  | 32 | - | 0.13 | - | 2 | Vineyard |
| 4P-WC | 33°58’30.82’’S18°47’07.84”E  | 34 | 0.13 | - | - | 2 | Vineyard |
| 5A-WC | 33°56’36.68’’S18°48’07.61”E  | 103 | - | 3.52 | - | 2 | Vineyard |
| 5P-WC | 33°56’51.80’’S18°45’55.06”E  | 116 | 3.52 | - | - | 2 | Vineyard |
| 1A-MP | 25°26’22,87’’S30°55’06.70’’E  | 687 | - | - | 5.16 | 1 | Roadside |
| 1M-MP | 25°26’03.57’’S30°52’02.49’’E  | 691 | 5.16 | - | - | 2 | Passion fruit (*Passiflora edulis* Sims. (Passifloraceae)) farm  |
| 2A-MP | 25°01’56.99’’S31°02’04.99’’E  | 694 | - | - | 0 | 1 | Macadamia nut (*Macadamia* sp. (Proteacae)) Farm |
| 2M-MP | 25°01’52.73’’S31°01’25.43’’E  | 694 | 0 | - | - | **2** | Residential |
| 3A-MP | 25°27’17.05’’S30°53’07.36’’E  | 525 | - | - | 1.1 | **2** | Residential area/scrap yard |
| 3M-MP | 25°27’17.05’’S30°53’07.36’’E  | 521 | 1.1 | - | - | 4 | Residential area/scrap yard |
| 4A-MP | 25°03’52.41’’S31°07’46.59’’E  | 566 |  - | - | 2.3 | 1 | Petrol Garage |
| 4M-MP | 25°02’10.75’’S31°07’05.83’’E  | 482 | 2.3 |  - | - | 3 | Golf course |
| 5A-MP | 24°58’48.04’’S31°28’53.93’’E  | 297 | - | - | 0 | 1 | National Park |
| 5M-MP | 24°58’48.04’’S31°28’53.93’’E  | 297 | 0 | - | - | 4 | National Park |

Supplementary Table 3. Comparison of *T. romana* abundance and injury in the LTS and NWS.

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| --- | --- | --- |
|  | **LTS** | **NWS** |
| Mean number of emergence holes in lateral shoots ± SE  | 0.88 ± 0.07 | 0.61 ± 0.30 |
| Percent of lateral shoots with: LTS - emergence holesNWS – *T. romana* larvae | 19 % | 26 % |
| Percent of plants with *T. romana* present | 42.44 % | 41 % |
| Mean number of larvae per lateral shoot ± SE | \_ | 1.13 ± 0.35 |
| Average number of *T. romana* per culm ± SE | 0.22 ± 1.46\* | 6.1 ± 1.60 |

\*based on the number of *T. romana* adult wasps recorded from the emergence boxes (10 reeds per box).

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| **a *A. donax***  | **b *P. australis*** |

Supplementary Figure 1. a. Incidence data for the herbivores on *A. donax* for the LTS for all five sites using the Chao 2 and ICE estimators (Colwell 2013). Both estimators predict that sampling should find about eight species for all sites with as many as twenty if sampling continues (Chao 2 upper 95% CI); b. Incidence data for the herbivores on *P. australis* for the LTS for all five sites using the Chao 2 and ICE estimators (Colwell 2013). Both estimators predict that six species are expected to be the total number of herbivores to be found at all five sites

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| --- |
| **a**../../../Desktop/Screen%20Shot%202016-04-01%20at%2012.47.20% |
| **b**../../../Desktop/Screen%20Shot%202016-04-01%20at%2012.48.59% |
| **c**../../../Desktop/Screen%20Shot%202016-04-01%20at%2012.49.27%../../../Desktop/Screen%20Shot%202016-04-01%20at%201.09.06% |

**Supplementary Figure 2.** Incidence data for the herbivores collected in all NWS using the Chao 2 and ICE estimators (Colwell 2013). a. *A. donax*: both estimators predict that five species are expected to be the total number of herbivores to be found at all five sites, with as many as six if sampling continues (Chao 2 upper 95% CI). b. *P. australis*: both estimators predict that twelve species is expected to be the total number of herbivores to be found at all five sites, with as many as twenty if sampling continues (Chao 2 upper 95% CI). c. *P. mauritianus*: both estimators predict that twelve species is expected to be the total number of herbivores to be found at all five sites, with as many as twenty if sampling continues (Chao 2 upper 95% CI).