

## **Supplementary material to:**

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Love at first bite? Pre-release surveys reveal a novel association between a native weevil and the invasive *Nymphaea mexicana* Zuccarini (Nymphaeaceae) in South Africa

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**Supplementary Table 1.** Detailed site descriptions of waterbodies invaded by *Nymphaea mexicana* in South Africa (March 2020 – March 2022), including information about damage to plants by herbivores. Coverage estimates were taken from at least two independent researcher observations in the field and averaged to reduce bias. Some sites were sampled twice to account for possible seasonal effects.

Site	Province	Survey date	Genotype	Site description	Mean coverage estimate %	Mean leaf length (cm)	Herbivore species richness	Notes on damage
<b>Sites sampled twice</b>								
Emmarentia Dam	Gauteng	15 Mar 2020	<i>N. mexicana</i>	No shade, <i>Pontederia cordata</i> L. (Pontederiaceae) growth around banks. > 1 m depth.	70	19.18	3	Some snail damage, a few tearing marks possibly from birds.
		23 Dec 2020			80		3	Minimal leaf damage.
Benoni Lake, Homestead	Gauteng	16 Mar 2020	<i>N. mexicana</i>	Knee depth near banks, up to 6 m deep. Reports of sewage flow into the dam. Reports of <i>Nymphaea nouchali</i> Burm. f. (Nymphaeaceae) occurrence previously. <i>Pontederia crassipes</i> Mart. (Pontederiaceae) present.	8 (of visible dam area)	20.98	2	Lots of yellowing (presumably from aphids), some minor chewing damage.
		22 Dec 2020			4		3	Low damage overall, but some scraping/chewing damage from Erebidae (Lepidoptera) larvae.
Florida Lake	Gauteng	16 Mar 2020	<i>N. mexicana</i>	Partly shaded, dense growth along banks. 0.4–0.8 m depth along banks. Littered water.	15	20.60	5	Chewing damage from green Lepidoptera larvae, some damage from snails.
		23 Dec 2020			10		5	Green and brown Lepidoptera larvae present. Many aphids.

Cosmos Lake, Pecanwood Estate	North West	17 Mar 2020	<i>N. mexicana</i>	Shaded along bank deepest point 2–3 m, most growth in middle of dam. Landowners arrange manual removal along banks.	75	23.66	1	Low levels of damage, any present likely from snails.
		28 Dec 2020			50		1	Very low levels of damage, only snails recorded.
Moreleta Kloof Nature Reserve	Gauteng	17 Mar 2020	<i>N. mexicana</i>	Interdispersed with heavy growth of <i>Typha</i> sp. L. (Typhaceae) and <i>N. mexicana</i> . Approximately 0.7 m deep. Some shading along edges, reports of sewage flow from upland. Landowners manage plants through manual removal.	35 (remainder occupied by <i>Typha</i> sp.)	20.84	0	Very healthy leaves, no damage apart from normal decay of old leaves.
		28 Dec 2020			3 (of visible water body, remainder occupied by <i>Typha</i> sp.)		1	Snails present, very low levels of damage.
Klipriviersberg Nature Reserve	Gauteng	18 Mar 2020	<i>N. mexicana</i>	Small pond at reserve entrance, slight shading, approximately 0.5 m depth. Dense surrounding cover ( <i>Cyperus</i> sp. L. (Cyperaceae) and Poaceae). <i>Myriophyllum aquaticum</i> (Vell.) Verdc. (Haloragaceae) also present. Pond had been drained, no <i>N. mexicana</i> present.	75	14.82	1	Some damage from snails, and some yellowing. Otherwise, minimal.
		22 Dec 2020			0		0	N/A

King's Beach Skate Park, Port Elizabeth	Eastern Cape	18 Sept 2020	<i>N. mexicana</i>	Open artificial pond, some intermittent shading along the banks. 0.5–1 m depth. Worker employed to pull leaves occasionally.	30	9.78	2	<i>Bagous longulus</i> Gyllenhal (Coleoptera: Curculionidae) found, chewing damage (shot holes in leaves) and mining.
		10 Jan 2021			20		2	High levels of damage, holes from chewing ( <i>B. longulus</i> and snails) and mines.
Tsitsikamma National Park	Eastern Cape	18 Sept 2020	Hybrid	Shading around edges, another pond 200 m along trail with <i>Nymphaea nouchali</i> and <i>Bagous longulus</i> . 1 m depth.	50	18.36	0	No insect damage obvious, some fungal damage and natural rotting of old leaves.
		9 Jan 2021			95		3	Scale insects (possibly Coccidae or Pseudococcidae) present in abundance on some leaves (especially those shaded). Some yellowing, but minimal damage overall.
Horse Fields Along N2, George	Western Cape	18 Sept 2020	Hybrid	Various waterlilies present (pink and white hybrids, as well as native <i>N. nouchali</i> ). <i>N. mexicana</i> hybrid with greatest coverage. <i>Pontederia cordata</i> present along banks. Turbid water, no shade.	6	20.42	1	<i>B. longulus</i> present, some chewing damage but no mining.
		25 Feb 2021			35		2	Some damage from Crambid moths, <i>B. longulus</i> present but minimal damage on any of the hybrids.

Westlakes, Muizenberg, Cape Town	Western Cape	19 Sept 2020	<i>N. mexicana</i>	Under bridge, many invasives around including <i>Pistia stratiotes</i> L. (Araceae), <i>Nasturtium officinale</i> W.T.Aiton (Brassicaceae), <i>Azolla filiculoides</i> Lamarck. (Salviniaceae), <i>Myriophyllum aquaticum</i> , <i>Sagittaria</i> sp. L. (Alismataceae). Site is managed using mechanical/manual removal.	3	22.14	0	No noticeable herbivores.
		26 Feb 2021			60		2	
Intaka Island, Century City, Cape Town	Western Cape	19 Sept 2020	<i>N. mexicana</i>	Wetland under balcony, no shade, surrounded by <i>Typha</i> . Other invasives present, including <i>Azolla filiculoides</i> and <i>Ceratophyllum demersum</i> L. (Ceratophyllaceae). Under 1 m depth. Reported treatment using chemical and manual control.	90	15.02	1	Low levels of damage, only some snail damage and yellowing.
		27 Feb 2021			55		0	
Maynardville Park, Cape Town	Western Cape	20 Sept 2020	Hybrid	Pond with some shading in the middle, littered and tepid water. Plants managed using manual/chemical control.	1	17.60	2	Minimal damage, some Chironomid larvae and snails.
		27 Feb 2021			0		0	

Yellowwood Dam, Somerset West	Western Cape	20 Sept 2020	<i>N. mexicana</i>	Dam in residential area, some shading around banks but high coverage of <i>N. mexicana</i> . Evidence of manual/mechanical removal.	95	18.76	2	Some snails and Chironomid larvae, lots of snail eggs.
		26 Feb 2021			40		2	Little/no damage. Aphids present.

**Sites sampled once**

Boardwalk pond, Port Elizabeth	Eastern Cape	10 Jan 2021	<i>N. mexicana</i>	Pond leading to larger section, minimal shading along edges, too deep to wade. Other waterlilies present, including <i>N. nouchali</i> , possibly <i>N. odorata</i> , but <i>N. mexicana</i> coverage most prominent. *Pond has since been drained for renovation of the Boardwalk.	90	17.08	2	Little damage, only some yellowing significant. Aphids and snails present.
Knysna Estate	Western Cape	25 Feb 2021	<i>N. mexicana</i>	Dam in residential estate, runoff reported from fertilized gardens uphill, lots of algae present. 1 m depth along edges, steep increase in depth towards middle. Native <i>N. nouchali</i> present in small numbers along edges.	60	9.14	2	Evidence of Crambid moth larval damage. <i>Bagous longulus</i> present in high abundance, relatively few larval mines.
Bellevue Wine Estate	Western Cape	27 Feb 2021	Hybrid	Pond on roadside coming into estate. <i>Nymphaea mexicana</i> present in non-shaded sections. <i>Salvinia molesta</i> D.Mitch (Salviniaceae) present in abundance. Polluted water, seepage from pipe protruding from under road.	20 (remainder <i>Salvinia molesta</i> )	21.48	0	No herbivores found. No noticeable damage.

Radway Green, Manley Flats	Eastern Cape	10 Mar 2021	Hybrid	Pond on side of farm road, lots of algae present, <i>Typha</i> abundant along banks.	10	20.82	2	Low damage overall, but Coccidae/Pseudococcidae present on underside of some leaves.
Kleinmond Golf Course	Western Cape	26 Feb 2021	Hybrid	Pond on golf course, native <i>Nymphaea</i> present in greater abundance than hybrid. Unshaded. <i>Pontederia cordata</i> present along banks.	20	23.76	2	<i>Bagous longulus</i> present in higher abundances on native <i>Nymphaea</i> , some mining in hybrid, 1–2 early instar larvae found in hybrid stems, compared with more abundant later instar larvae in native <i>Nymphaea</i> .
Haga Haga Farm	Eastern Cape	12 Feb 2021	Hybrid	Farm dam with some shading along banks, native <i>N. nouchali</i> present alongside hybrid.	60	24.46	1	<i>Bagous longulus</i> present, damaging and reproducing on native <i>Nymphaea</i> , only a few exploratory feeding on hybrids, with only early instar larvae not reaching petiole.
Masescha Lodge, Plettenberg Bay	Western Cape	8 May 2021	Hybrid	Small, shallow dam in garden, without shade. <i>Nymphaea nouchali</i> present in similar numbers.	35	16.88	2	Some snail damage, and exploratory feeding by <i>B. longulus</i> . No <i>B. longulus</i> larvae found in hybrid stems, multiple larvae found in native <i>Nymphaea</i> stems.
Pledge Nature Reserve, Knysna	Western Cape	8 May 2021	Hybrid	Two small ponds surrounded and shaded by trees and Cyperaceae. Reports of occasional sewage overflow from upland areas during heavy rains. 1 m depth along banks to more than 2 m. Native <i>Nymphaea</i> present.	30	15.62	1	Some fungal spotting and yellowing.
Belvidere pond, Knysna	Western Cape	8 May 2021	<i>N. mexicana</i>	Shallow pond in middle of park, shaded by trees. <i>Azolla filiculoides</i> present, as well as <i>Typha</i> along banks.	90	16.82	1	Lots of aphids, some yellowing, similar to Yellowwood dam in Somerset West.

New Germany Nature Reserve	KwaZulu-Natal	7 March 2022	Hybrid	Open dam, some shading at edge at southern edge.	96	23.28	0	Some evidence of sap sucking, no herbivores seen.
Fountainhill Estate	KwaZulu-Natal	8 March 2022	<i>N. mexicana</i>	Waterway either side of bridge in full sun, mixed with native <i>Nymphaea</i> .	13	22.48	1	Damage from <i>Bagous longulus</i> , larvae found in abundance in stems, suggesting reproduction. <i>B. longulus</i> also on native <i>Nymphaea</i> .
Sakabula Golf Club	KwaZulu-Natal	8 March 2022	<i>N. mexicana</i>	Dam, water from groundwater supply. Overflow from adjacent properties, knee depth.	37	17.72	1	Some yellowing from aphids.