1st Post-transplantation Monitoring and Audit Report (24th November 2022)

Northeast New Territories Landfill Extension (NENTX) | Contract No. EP/SP/77/15

0092/22/ED/0281 02 | 31 January 2023

Formal Submission

Veolia Environmental Services Hong Kong Limited

MEINHARDT
Consulting Engineers . Planners . Managers
工程設計 . 策劃 . 統籌

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Our Ref.: CL/91823/0327-VES
Date: 3 April 2023

By Email

Veolia Hong Kong Holding Limited
40/F, One Taikoo Place
979 King's Road
Quarry Bay
Hong Kong

Attn.: Mr. Alvin Kam

Dear Sir

Re: Contract No. EP/SP/77/15
North-East New Territories Landfill Extension (NENTX)
1st Post-Transplantation Monitoring Report (24 November 2022)

I refer to Conditions 2.7 and 2.9 under Environmental Permit No. EP-292/2007 and Conditions 2.5 and 2.7 of Further Environmental Permit No. FEP-01/292/2007, regarding the submission of Post-Transplantation Monitoring Report. I hereby verified the captioned "1st Post-Transplantation Monitoring Report (24 November 2022)" dated 31 January 2023.

Should you have any queries, please do not hesitate to contact the undersigned at 2859 5409.

Yours faithfully
MEINHARDT INFRASTRUCTURE AND ENVIRONMENT LTD

Claudine Lee
Independent Environmental Checker

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Ref: P521530-0000-REV-NN-0034

By Email

23 March 2023

Meinhardt Infrastructure & Environment Ltd.
10/F Genesis
33-35 Wong Chuk Hand Road
Hong Kong

Attn: Ms. Claudine Lee,

Dear Claudine,

Re: Contract No. EP/SP/77/15
Northeast New Territories Landfill Extension
Submission of 1st Post-Transplantation Monitoring Report (24 November 2022)

In accordance with the requirement specified in Conditions 2.7 and 2.9 of Environmental Permit No. EP-292/2007 and Conditions 2.5 and 2.7 of Further Environmental Permit No. FEP-01/292/2007, we are pleased to submit the certified "1st Post-Transplantation Monitoring Report (24 November 2022)" dated on 31 January 2023 for your verification.

Should you require any further information or clarification, please do not hesitate to contact the undersigned or our Mr. Keith Chau on 3664 6788.

Yours faithfully,
For and on behalf of
Aurecon Hong Kong Limited

Fredrick Leong
Environmental Team Leader

Encl.
1. 1st Post-Transplantation Monitoring Report (24 November 2022)

cc.
1. IEC - Ms. Claudine Lee (By email: claudinelee@meinhardt.com.hk)
2. IEC Representative - Mr. Jimmy Lui (By email: jimmylui@meinhardt.com.hk)

Document Control

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Client Contact	Mr. William Wan
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01	31 Jan 2023	Draft	Awaiting client's comments	Various	FN	FN
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Project Team

Initials	Name	Role
CY	Colin Yung	Project Manager
FN	Fenelyn Nabuab	Ecologist/ ISA Certified Arborist HK1821A/TRAQ
RL	Ray Li	Environmental Consultant/ ISA Certified Arborist HK1838A/TRAQ
JT	Jhomar Tillo	Ecologist
AY	Andy Yuen	Assistant Environmental Consultant

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Appendices

1. INTRODUCTION

1.1 Background of the Project

1.1.1 The North East New Territories Landfill Extension (the NENTX Project) is a designated project. The Environmental Impact Assessment (EIA) Report was approved (AEIAR-111/2007) with conditions on 20 September 2007 and the Environmental Permit (EP) EP-292/2007 (the "EP) was issued on 26 November 2007. Moreover, a Further Environmental Permit FEP-01/292/2007 (the "FEP") was also issued under the EIA Ordinance on 28 April 2022.

1.1.2 The transplantation works were conducted in fulfilment of Conditions 2.7 and 2.9 of the EP and Conditions 2.5 and 2.7 of the FEP and in accordance with the approved Transplantation Proposal for Plant Species of Conservation Importance (Rev.1) (NENTX-FUG-RP-E-EM-002-I02) (the "approved Proposal"). The Transplantation Report (NENTX-AURE-RP-ZZ-E-007-I-I01) was prepared by a qualified ecologist certified by the Environmental Team (ET) Leader and Independent Environmental Checker (IEC) in accordance with Condition 2.7 of the EP and Condition 2.5 of the FEP.

1.1.3 The Transplantation Report details the methodology of the transplantation activities. The actual transplantation works for the plant species of conservation importance was described along with the post-transplantation maintenance. The post-transplantation monitoring and audit and the implementation programme was also detailed. The vegetation survey which investigated the plant species of conservation importance before the transplantation work was detailed in the approved Transplantation Proposal.

1.1.4 Before the transplantation activities, a detailed vegetation survey was conducted by direct observation to record the plant species of conservation importance present in NENTX. A total of four floral species of conservation importance were identified within the Project Site, namely Incense Tree *Aquilaria sinensis*, Endospermum *Endospermum chinense*, Lamb of Tartary *Cibotium barometz* and Bottlebrush Orchid *Goodyera procera*. Individuals that were directly impacted by the proposed construction of NENTX Landfill had been selected for transplantation. More details to be found in the approved Transplantation Proposal.

1.1.5 Based on the findings of the detailed vegetation survey and verification survey, three plant species of conservation importance were considered suitable for transplantation, i.e., two nos. of Incense Tree saplings, one cluster of Lamb of Tartary, and 19 clusters of Bottlebrush Orchid. The transplantation works was carried out by a landscape contractor and supervised by a qualified ecologist. The qualified ecologist has at least five years of relevant experience in transplantation and/or vegetation survey and assessment and is also an ISA Certified Arborist.

1.1.6 The three plant species of conservation importance were transplanted to suitable receptor sites. To further safeguard these species, the selected receptor sites were within or adjacent to the facilities managed by the Contractor. Moreover, the similarity in site conditions between the collection site and receptor site and the accessibility of the receptor for future maintenance and monitoring were also considered in the selection. More details to be found in the Transplantation Report.

1.1.7 All the transplanted individuals will be maintained by the Contractor for 12 months (establishment period) after planting to the receptor sites in accordance with Section 4 of the approved Proposal. Moreover, their survival and growth will be monitored by a qualified ecologist or botanist of Fugro in accordance with Section 5 of the approved Proposal.

1.2 Purpose of this Document

1.2.1 This 1st Post-transplantation Monitoring Report (the "Report") was prepared to present the survival and growth of plant species of conservation importance after transplantation works. Moreover, key maintenance activities conducted this reporting month and recommendations on post-transplantation maintenance are presented in this Report.

1.2.2 The post-transplantation monitoring and audit of the transplanted plant species of conservation importance was caried out in accordance with Section 5 of the approved Transplantation Proposal.

1.3 Structure of this Document

Succeeding this introductory section, the remainder of this Report is presented as follows:

- Section 2 details the monitoring results, including the key maintenance activities conducted this reporting month;
- Section 3 presents the succeeding post-transplantation monitoring schedule; and
- Section 4 summarizes the findings of the post-transplantation monitoring and way forward.

2. MONITORING RESULTS

Following the transplantation works on 10 November 2022, the 1st post-transplantation monitoring and audit was carried out on 24 November 2022 to check the condition of the transplanted plant individuals.

2.1 Condition of the Transplanted Individuals

2.1.1 The transplanted individuals, i.e., two nos. of saplings of the Incense Tree *Aquilaria sinensis*, one cluster of Lamb of Tartary *Cibotium barometz*, and about 19 clusters of Bottlebrush Orchid *Goodyera procera* were generally in fair to good condition. The Lamb of Tartary, however, exhibited discoloration and wilting of leaves. Albeit strict compliance of the transplantation works and post-transplantation maintenance to the approved Transplantation Proposal, transplanted individuals would require time to adapt and establish in the new environment/substrate of the receptor site. Hence, signs of leaf discoloration and/or wilting, dehydration, and even die-off are expected. Thus, succeeding post-transplantation maintenance and monitoring and audit are crucial to assess the progress of recovery and establishment of transplanted individuals in the receptor site.

2.1.2 The numbers, measurements, and health conditions of the transplanted plant species of conservation importance during the current monitoring period are shown in **Appendix A**.

2.1.3 The photographic records of the transplanted plant species of conservation importance during the current monitoring period are shown in **Appendix B**.

2.2 Key Maintenance Activities Conducted in The Reporting Month

2.2.1 The key maintenance activities carried out for the current reporting month are the following:

- Daily watering of the Incense Tree saplings and Lamb of Tartary at least for the first week of post-transplantation works and reduced to 2-3 times per week during the succeeding week. The watering dates were 11-17 Nov for the first week after transplantation and 21 Nov and 23 Nov for the succeeding week.
- Once a week watering of Bottlebrush Orchid. The watering dates were 11 Nov, 17 Nov, and 24 Nov.
- Manual removal of weeds when observed during watering activities; and
- Checking of insect attacks and/or fungal infestation during watering activities.
- Prevention of human disturbance by fencing off area around the two Incense Tree saplings *Aquilaria sinensis*.

2.3 Recommendation on Post-Transplantation Maintenance

Immediately after the monitoring and audit activity, the following post-transplantation maintenance was discussed with the Contractor for their prompt implementation:

- The watering frequency for the two saplings of Incense Tree should be increased to 3-4 times a week.

- The watering frequency of the cluster of Lamb of Tartary should be reduced to once a week.
- The watering frequency for all 19 clusters of Bottlebrush Orchid should remain the same. During watering activities, the surrounding weeds and decaying leaves should be removed.

3. POST-TRANSPLANTATION MONITORING SCHEDULE

3.1.1 As per Section 10.3 and Table 10.1 of the EM&A Manual, the survival and growth of the transplanted species will be monitored by a qualified ecologist or botanist at least twice a month during the first three months after transplantation and once a month in the following nine months.

3.1.2 As only one monitoring activity will be conducted in November, the forthcoming monitoring and audit activities will be conducted twice a month for December, January and February. Then, the monitoring activities will be conducted monthly until October 2023.

3.1.3 The need for any further monitoring will be reviewed and determined according to the monitoring results of the 12-month monitoring.

4. SUMMARY AND CONCLUSION

The health of the transplanted individuals of Incense Tree and Bottlebrush Orchid ranged from fair to good condition. Minor health issues such as diebacks were observed on the two Incense Tree saplings but overall, these two saplings were still under fair health conditions. Moreover, some clusters of Bottlebrush Orchid manifested mild health issues such as slightly chlorotic and wilted leaves, but their health conditions were still fair overall. The transplanted cluster of Lamb of Tartary, however, seemed to exhibit poor health condition as some of its leaves were showing discoloration and have already wilted. It is recommended that more attention should be focused on the post-transplantation maintenance of the Lamb of Tartary.

Appendix A

Conditions of Transplanted Plant Species of Conservation Importance

24/11/2022

Post-Transplantation Monitoring
Conditions of Transplanted Plants at Receptor Sites

Date of Submission: _____ Surveyor: Ray Li, Jhomar Tillo & Andy Yuen

Date of Monitoring and Maintenance	Receptor Site	No.	Species	Plant Size Measurements			Amenity Value	Form	Health Condition	Structural Condition	Recommendation on Post-Transplantation Maintenance	Key Maintenance Activities Conducted	Remark
				DBH (mm)	Crown Spread (m)	Height (m)	(High/ Medium/ Low)	(Good/ Fair/ Poor)	(Good/ Fair/ Poor)	(Good/ Fair/ Poor)			
24/11/2022	A	AS-03	A. sinensis		0.4	1.8			F		increase watering frequency		dieback
24/11/2022	A	AS-02	A. sinensis		0.3	1.2			F		increase watering frequency		dieback
24/11/2022	B	CB-01	C. barometz			1.8			P		water the plant once per week		wilted leaves
24/11/2022	B	GP-15	G. procera			0.13			F				
24/11/2022	B	GP-13	G. procera			0.07			G				
24/11/2022	B	GP-19	G. procera			0.20			F				part of the leaf is wilted
24/11/2022	B	GP-11	G. procera			0.18			F				part of the leaf is wilted
24/11/2022	B	GP-07	G. procera			0.13			F				
24/11/2022	B	GP-05	G. procera			0.19			F				
24/11/2022	B	GP-01	G. procera			0.17			F				part of the leaf is wilted
24/11/2022	B	GP-04	G. procera			0.24			F				chlorotic leaf
24/11/2022	B	GP-12	G. procera			0.07			F				hole on the leaf
24/11/2022	B	GP-03	G. procera			0.07			F				hole on the leaf
24/11/2022	B	GP-18	G. procera			0.10			F				
24/11/2022	B	GP-02	G. procera			0.07			F				chlorotic leaves
24/11/2022	B	GP-01	G. procera			0.15			F				part of the leaf is wilted
24/11/2022	B	GP-16	G. procera			0.13			F				
24/11/2022	B	GP-08	G. procera			0.11			F				
24/11/2022	B	GP-09	G. procera			0.14			G				
24/11/2022	B	GP-10	G. procera			0.24			F				hole on the leaf
24/11/2022	B	GP-14	G. procera			0.15			F				chlorotic leaf
24/11/2022	B	GP-17	G. procera			0.10			F				

Note:
1. Measurements of spread and DBH are not applicable for undersized tree, shrubs, herbs and ferns.

Appendix B

Photographic Records of Transplanted Plant Species

B.1 Incense Tree *Aquilaria sinensis*

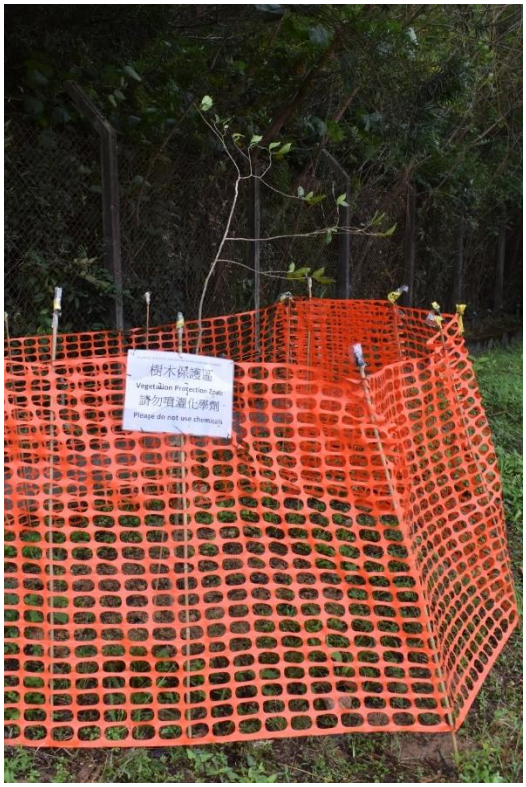

Photo B.1.1. : General view of the transplanted individual AS-03.

Photo B.2.2.: Leaf condition of the transplanted individual AS-03

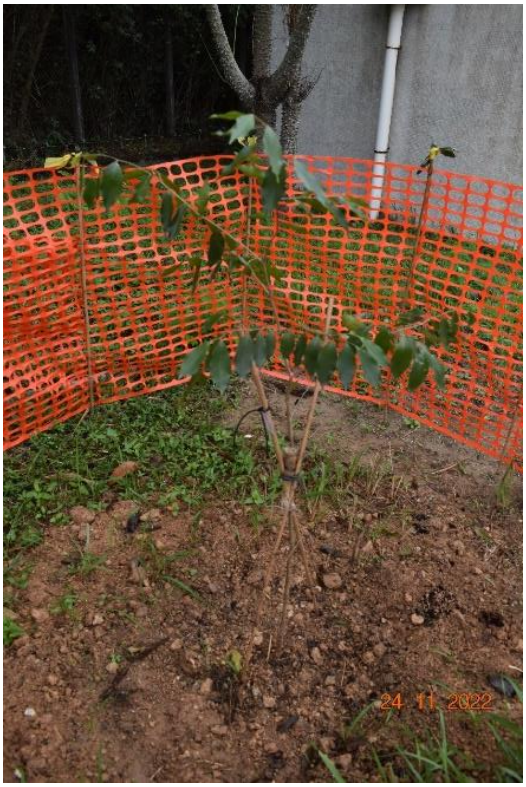

Photo B.3.2.: General view of the transplanted individual AS-02.

B.2 Lamb of Tartary *Cibotium barometz*

Photo B.2.1: General view of the transplanted individual CB-01

Photo B.2.2: Figure 2.2: Wilted leaves of the transplanted individual CB-01.

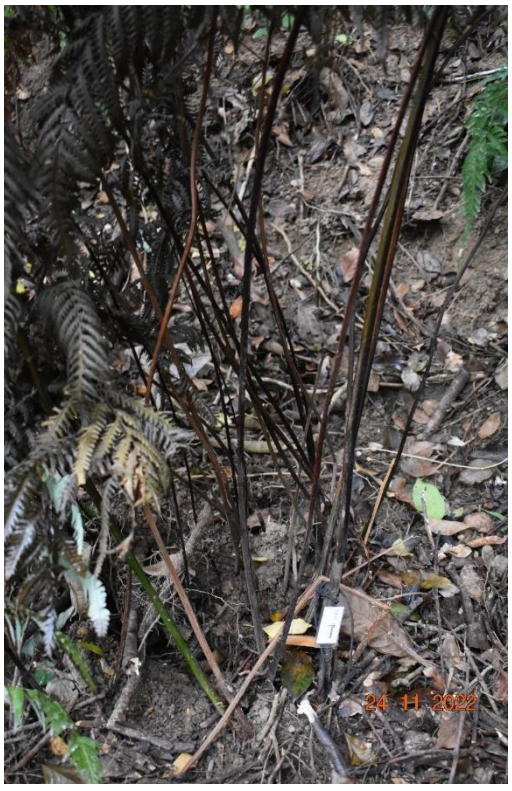

Photo B.2.3: Stem conditions of the transplanted individual CB-01.

B.3 Bottlebrush Orchid *Goodyera procera*

Photo B.3.1: Individual GP-01. Partially wilted leaf.

Photo B.3.2: Individual GP-02. Chlorotic leaf.

Photo B.3.3: Individual GP-03.

Photo B.3.4: Individual GP-03. Hole in leaf.

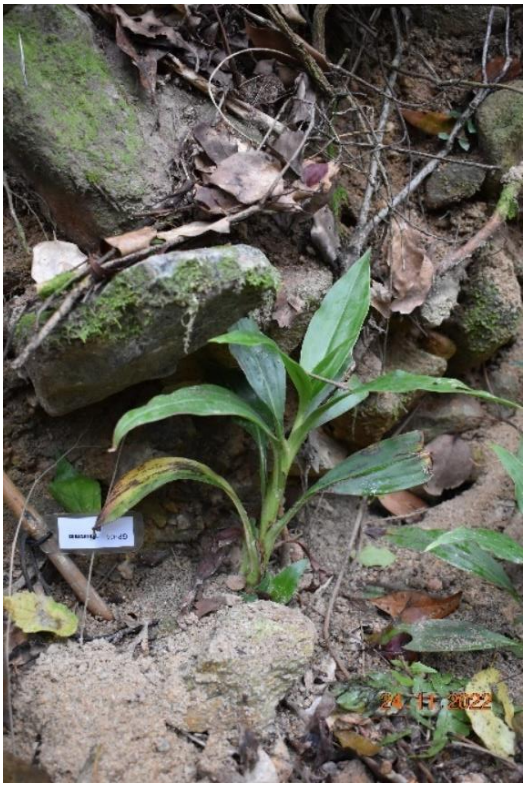

Photo B.3.5: Individual GP-04. Chlorotic leaf.

Photo B.3.6: Individual GP-04. Chlorotic leaf.

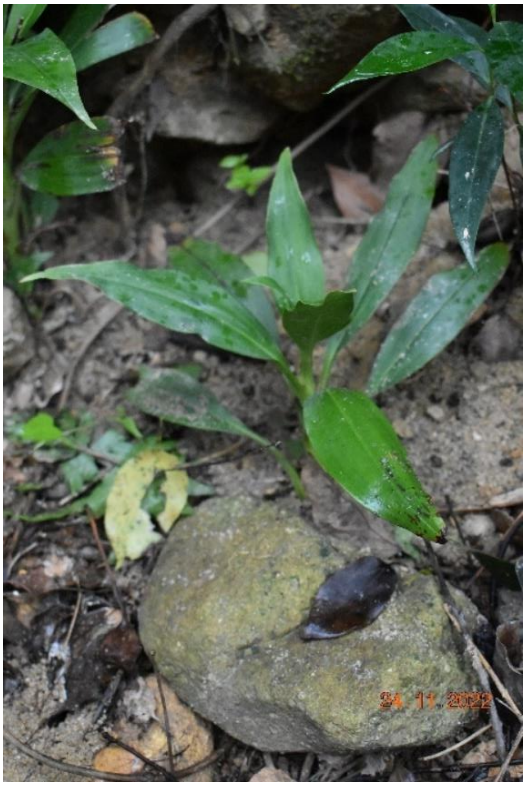

Photo B.3.7: Individual GP-05.

Photo B.3.8: Individual GP-06.

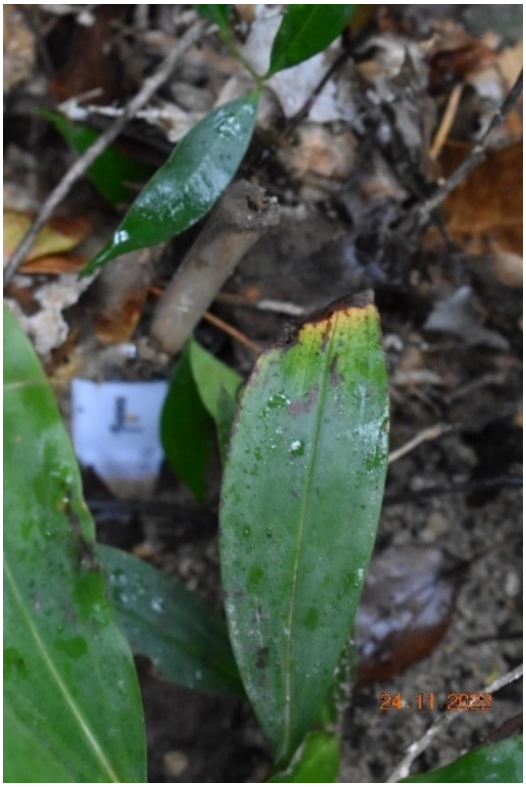

Photo B.3.9: Individual GP-06. Partially wilted leaf.

Photo B.3.10: Individual GP-07.

Photo B.3.11: Individual GP-08.

Photo B.3.12: Individual GP-09.

Photo B.3.13: Individual GP-10. Holes in leaves.

Photo B.3.14: Individual GP-10. Holes in leaves.

Photo B.3.15: Individual GP-11.

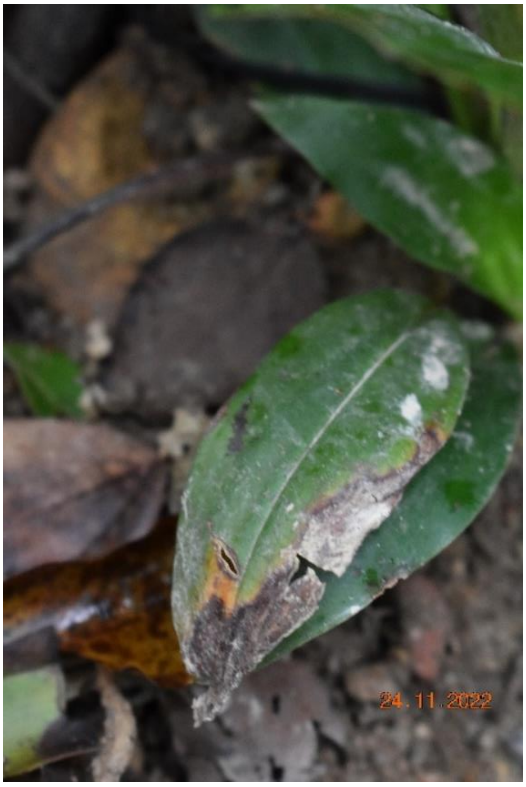

Photo B.3.16: Individual GP-11. Partially wilted leaves.

Photo B.3.17: Individual GP-12. Hole in leaf.

Photo B.3.18: Individual GP-12. Hole in leaf.

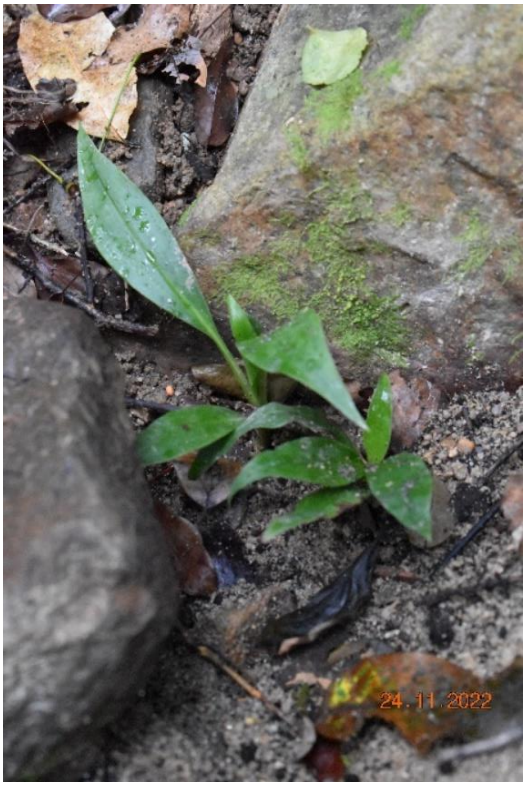

Photo B.3.19: Individual GP-13.

Photo B.3.20: Individual GP-14.

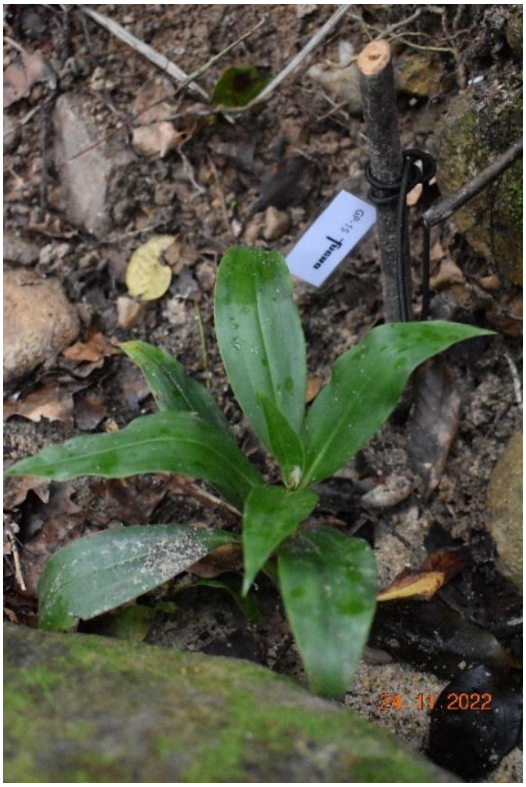

Photo B.3.21: Individual GP-15.

Photo B.3.22: Individual GP-16.

Photo B.3.23: Individual GP-17.

Photo B.3.24: Individual GP-18.

Photo B.3.25: Individual GP-19.

Photo B.3.26: Individual GP-19. Partially wilted leaves.