NEW GOLD RAINY RIVER MINE
APPENDIX Q
BAT MONITORING RESULTS

EcoMetrix INCORPORATED

17 March 2021

NEW GOLD INC.
Rainy River Mine
P.O. Box 5
Emo, Ontario
P0W 1E0

Dear Mr. Baird:

Reference: 2020 Bat Monitoring

Ecometrix is pleased to provide New Gold Inc. (New Gold) with the New Gold 2020 Bat Monitoring Report to fulfill a portion of the requirements for the 2020 Wildlife Bird Monitoring contract with the Rainy River Mine (RRM). Ecometrix has signed a letter of intent with the Naotkamegwanning First Nation (NFN) to help build their capacity in monitoring based contracts at the RRM. Northern Bioscience was subcontracted to perform the 2020 Bat Monitoring program and associated reporting. The technical aspects of the study and the report were then reviewed by Derek Hillis, Senior Environmental Scientist with Ecometrix.

We trust that this report meets your requirements at this time. If you require any further information, please do not hesitate to contact Joe Tetreault at 905-452-4676.

Yours truly,
ECOMETRIX INCORPORATED

Joe Tetreault

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New Gold Rainy River Mine
Bat Monitoring Report 2020

February 20, 2021

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EXECUTIVE SUMMARY

Species at risk surveys were conducted in 2020 for New Gold's Rainy River Mine to support monitoring requirements following the 2015 Environmental Assessment. This report summarizes the 2020 bat monitoring program.

Bat acoustic surveys were conducted between June 2 and July 1 2020 for a time period of 30 nights at five monitoring stations previously monitored in 2015, 2016, and 2017 (2018 data were not included due to recorder failure). All six bat species previously detected were recorded in 2020 including the endangered Little Brown Myotis and Northern Myotis. *Myotis* species declined substantially between 2015 and 2020 at all five stations from 52.2 passes/night in 2015 to 21.3 passes/night in 2017 and 0.35 passes/night in 2020. Other bat species (non *Myotis*) did not decline. The decline in *Myotis* is consistent with declines across eastern North America caused by White Nose Syndrome rather than localized mine related impacts.

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1 INTRODUCTION

This report summarizes the bat surveys conducted in 2020 for New Gold's Rainy River Mine to support monitoring requirements following the 2015 Environmental Assessment. The project is in Chapple Township, approximately 65 kilometres northwest of Fort Frances, in northwestern Ontario (Figure 1).

As per Provincial Environmental Assessment Notice of Approval Condition 6 surveys targeted Little Brown Myotis (*Myotis lucifugus*) and Northern Myotis (*Myotis septenrionalis*) and follows methods used in previous monitoring conducted (Wood 2019).

2 METHODS

Bat monitor were installed and removed on June 1-2 and July 2-3 2020 by Allan Harris and Brian Ratcliff of Northern Bioscience at survey points previously sampled by Wood (2019).

2.1 Bat Monitoring

Bat acoustic monitoring was conducted between June 2 and July 2 2020 for a time period of 30 nights at five monitoring stations (**Error! Reference source not found.**). This period covers the maternal brood rearing period for the two species at risk (Little Brown Myotis and Northern Myotis) occurring in the area. Figure 3 and Figure 4 provide a photograph of a monitoring set-up and an example recording output, respectively.

The same stations were monitored between 2015 and 2018 although the duration and timing varied between years (Wood 2019) (Table 1).

MiniBat recorders with integrated microphones (stations D20, D25) and SM4Bat recorders with SMM-U1 microphones (stations D21, D23, D24) were used to perform the acoustic monitoring. Bat detectors were configured to begin recording when ultrasonic signals (>16 kHz) greater than 18 decibels (dB) above the noise floor rolling average were detected. A 2 second recording was saved each time the recorder was triggered.

Recorders were tested before and after deployment using a Wildlife Acoustic ultrasonic calibrator. They were programmed to record from about 1 hour before sunset until one hour after sunrise (i.e. 20:09 CDT to 06:15 CDT). Recorders were installed approximately 2 m above the ground attached to tree trunks. Recorder details and station coordinates are provided in Appendix 1 and data are in Appendix 2.

Recordings were identified to species using Kaleidoscope analysis software (Wildlife Acoustics) (Figure 4). *Myostis* sp. sonograms were verified manually using frequency of maximum energy, minimum and maximum frequency, and call duration. Sonograms of "unknown" recordings were scanned manually for additional records of *Myotis* sp. where identifiable to genus.

Differentiating between Little Brown and Northern Myotis can be difficult and these species were grouped for some analyses.

The recorder at D23 may have failed to record on some nights. Although the recorder was successfully tested before and after deployment, bat recordings were only made on five nights (June 2-5, 15) for a total of 25 passes. In contrast, other recorders made over 1,000 recordings during the same period.

Table 1. Details of bat surveys 2015 – 2020 at Rainy River Project (2015-2018 data from Wood 2019).

Date	Detector	Recording Dates	# nights
2015	D20	June 7-20, June 26- July 10	29
	D21	June 7-18, June 26- July 9	26
	D23	June 7-18, June 26- July 9	25
	D24	June 7-22, June 27- July 10	31
	D25	June 7-21, June 26- July 10	30
2016	D20	June 25- July 9	15
	D21	June 19- 30	12
	D23	June 20- July 4	15
	D24	June 19-July 1	13
	D25	June 20- July 3	14
2017	D20	June 3-16, July 1- 17	31
	D21	June 1-6, July 2- 15	20
	D23	June 2-16, July 1- 15	30
	D24	June 1-15, July 2- 15	29
	D25	June 3-16, July 1- 16	31
2018	D20	Aug 12-Sep 6	26
	D21	June 21-27, Aug 12-Sep 6	N/A
	D23	June 2-16, July 1- 15	N/A
	D24	June 1-15, July 2- 15	N/A
	D25	Aug 12-Sep 6	N/A
2020	D20	June 2 – July 1	30
	D21	June 2 – July 1	30
	D23	June 2 – July 1	30
	D24	June 2 – July 1	30
	D25	June 2 – July 1	30

Figure 1. Location of New Gold project site in northwestern Ontario.

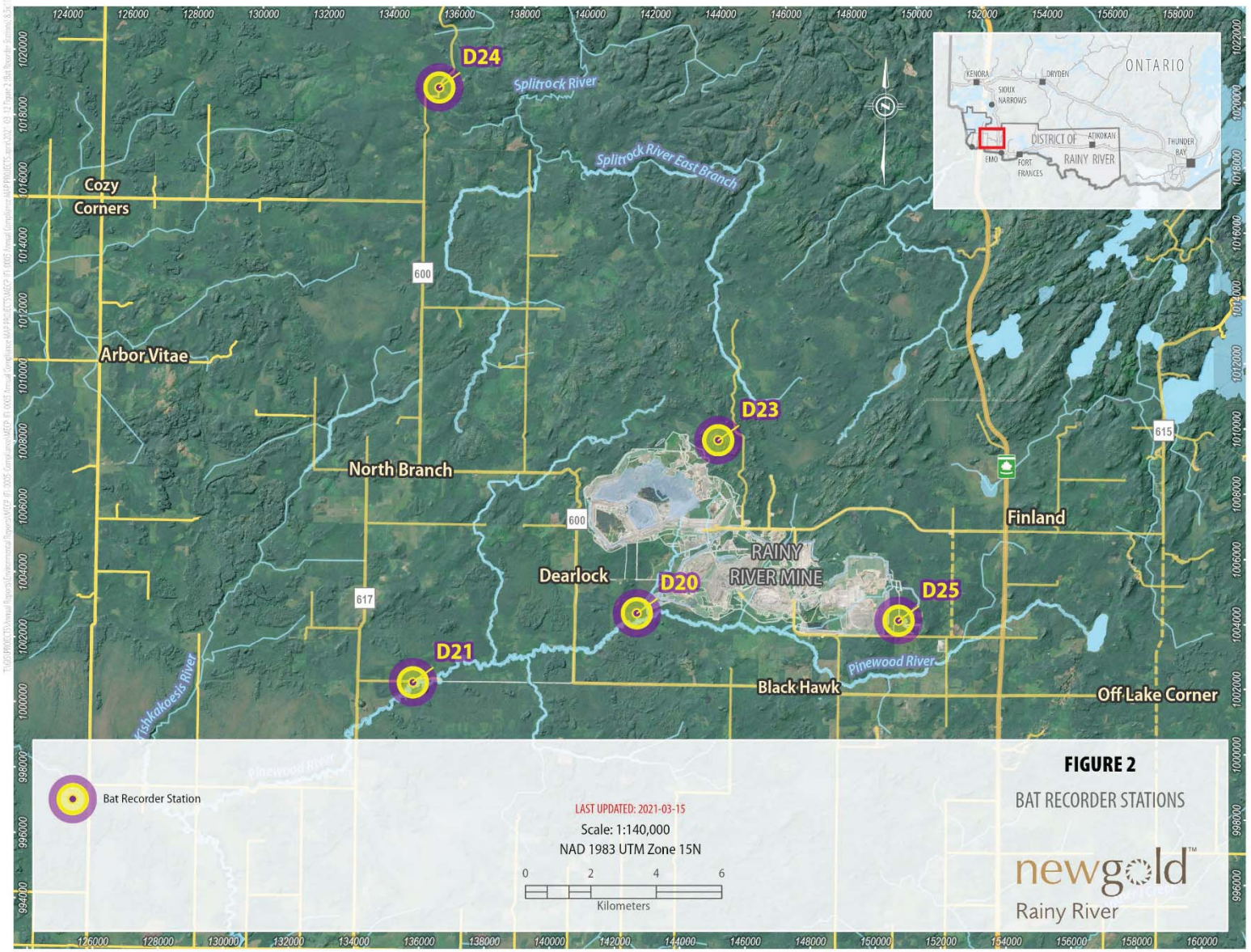

Figure 2. Bat recorder stations monitored at New Gold in 2020.

Figure 3. Photograph of bat recorder at Station D23.

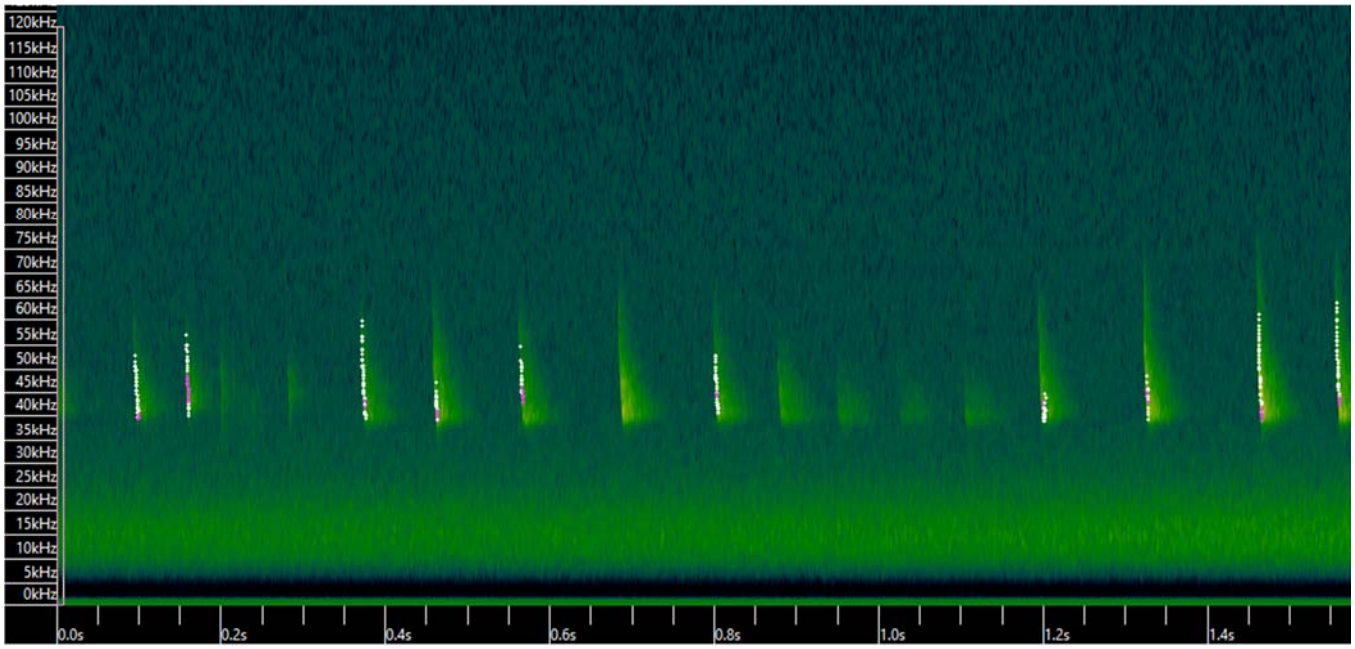

Figure 4. Little Brown Myotis sonogram. New Gold site, station D21, July 1 2020.

3 RESULTS AND DISCUSSION

3.1 Bat Monitoring

A total of 7,973 bat passes were recorded at the five recorders between June 2 and July 1 2020 (Table 2, Appendix 2). This included 53 passes of *Myotis* (Little Brown Myotis, Northern Myotis, and unidentified Myotis combined). All six bat species previously detected in 2012 to 2018 were recorded in 2020 (Table 4).

Table 2. Bat passes recorded at New Gold project June 2 to July 1 2020. The number of nights each species was detected is in parentheses. See Figure 2 for recorder locations.

Station	Big Brown*	Red	Hoary	Silver-haired*	Little Brown Myotis	Northern Myotis	Myotis sp.	Unknown Species	Total
20	0 (0)	15	618 (29)	482 (30)	3 (3)	0 (0)	9 (6)	1202 (30)	2320
21	4 (4)	1 (1)	29 (11)	623 (30)	5 (3)	0 (0)	1 (1)	867 (29)	1529
23	5 (3)	1 (1)	0 (0)	11 (3)	5 (2)	0 (0)	2 (2)	3 (2)	25
24	4 (4)	4 (3)	452 (30)	549 (30)	7 (7)	1 (1)	3 (3)	436 (30)	1453
25	16 (11)	7 (4)	767 (30)	1587 (30)	12 (9)	0 (0)	1 (1)	257 (30)	2646
Total	**29**	**29**	**1866**	**3252**	**32**	**1**	**16**	**2765**	**7973**

* Silver-haired and Big Brown bats cannot always be distinguished by sonogram.

Table 3. Bat species confirmed present by year at New Gold project (2012 to 2018 data from Wood 2019).

Species	2012	2013	2015	2017	2018	2020
Big Brown Bat (*Eptesicus fuscus*)	-	X	X	X	X	X
Silver-haired Bat (*Lasionycteris noctivagans*)	X	X	X	X	X	X
Eastern Red Bat (*Lasiurus borealis*)	X	-	X	X	X	X
Hoary Bat (*Lasiurus cinereus*)	X	X	X	X	X	X
Little Brown Myotis *(Myotis lucifugus)*	X	X	X	X	X	X
Northern Myotis (*Myotis septentrionalis*)	X	X	X	-	-	X

The total number of bat passes (all species combined) in 2020 generally increased through the sampling period with a peak of 658 passes on July 1 (Figure 5). *Myotis* passes were too infrequent to show any evident trends through the sampling period (Figure 5).

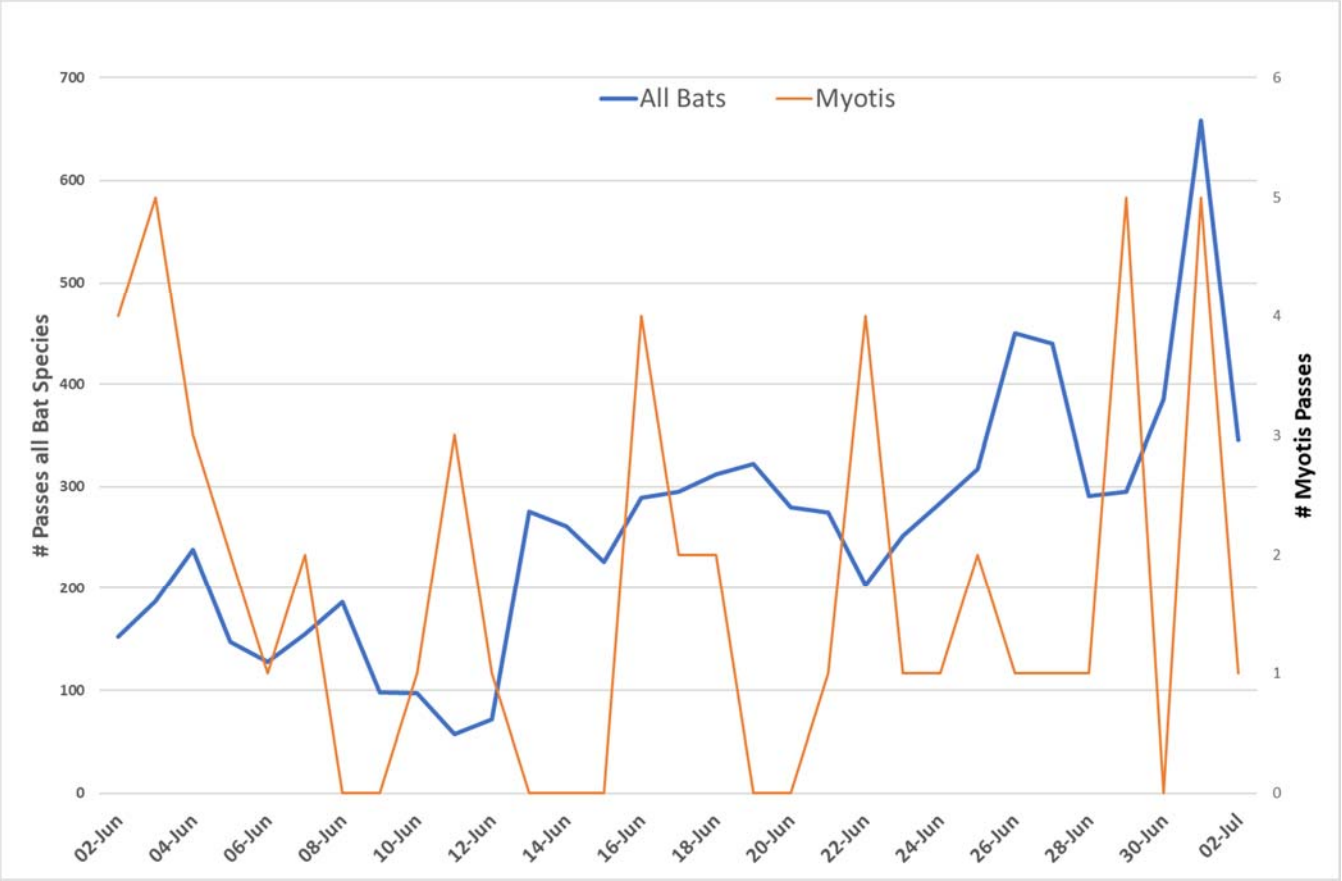

Figure 5. Bat passes by date all recording, June 2 to July 1 2020.

Myotis species were detected at all survey stations in 2020 but were too infrequent to show any evident differences between stations (Table 4). Station D25, 500 m east of the mine footprint, recorded more passes of *Myotis* and other bats in 2020 (Table 2).

In 2015 to 2017, station D21 (about 7 km southwest of the mine site) had the greatest number of *Myotis* passes (making up 68% to 93% of *Myotis* detections), probably due to its position beside the Pinewood River and a diversity of foraging habitat including agricultural fields to the north and forest to the south of the river (Wood 2019). Other monitoring stations were not on rivers and lacked the diversity of foraging habitat at D21.

Far fewer *Myotis* bats were detected in 2020 than previous years. The total number of *Myotis* passes declined from 52.2 /night in 2015 to 21.3/night in 2017, with a further decline to 0.35/night in 2020 (Figure 6, Table 4). Other bat species did not show the same decline (Figure 6, Table 4). The decline in *Myotis* at the New Gold site was almost certainly caused by White Nose Syndrome rather than mine-related impacts. White Nose Syndrome (caused by the fungus *Pseudogymnoascus destructans*) was first detected in upstate New York in 2006 and has since killed millions of bats throughout eastern North America (White-Nose Syndrome Response Team 2021). Little Brown Myotis and Northern Myotis are the two species most impacted by White Nose Syndrome (White-Nose Syndrome Response Team 2021). The disease

was first detected in northwestern Ontario in 2013-2014 and confirmed in the Lake of the Woods area in 2016-2017 (White-Nose Syndrome Response Team 2021). Although northwestern Ontario monitoring data are unavailable, *Myotis* numbers dropped by about 90% between 2016 and 2020 on six survey routes in northern Minnesota during the same period (Catton 2020).

Habitat differences between monitoring stations also complicate the interpretation of *Myotis* trends. The "control" station D21 had at least five times as many *Myotis* passes as any of the other stations between 2015 and 2017 (the mine went into production in 2017) (Table 4). Its position on the Pinewood River and proximity to abundant edge between forest and fields probably offer the best *Myotis* foraging habitat. In contrast, station D23 was surrounded by forest with no waterbodies or other clearings within over 300 m and had fewer foraging bats than most other stations. As noted above, recorder D23 may have failed to record on some nights in 2020 but this potential data gap should not impact the interpretation of *Myotis* population trends given the above factors.

Table 4. Species at Risk Bat passes recorded by year (2015 to 2017 data from Wood 2019. 2018 data are excluded due to incomplete data caused by recorder failure).

Year	Detector	Little Brown Myotis		Northern Myotis		Unidentified Myotis sp.		All Myotis sp.	
		Total Passes	Passes/ night	Total Passes	Passes/ night	Total Passes	Passes/ night	Total Passes	Passes/ night
2015	D20	418	14.41	4	0.14	629	21.69	1051	36.24
	D21	3880	149.23	0	0	1272	48.92	5152	198.15
	D23	90	3.6	11	0.44	224	8.96	325	13.00
	D24	510	16.45	5	0.16	249	8.03	764	24.65
	D25	23	0.77	2	0.07	39	1.3	64	2.13
	Total	**4921**	**34.9**	**22**	**0.16**	**2413**	**17.11**	**7356**	**52.17**
2016	D20	7	0.47	0	0	111	7.4	118	7.87
	D21	330	27.5	0	0	243	20.25	573	47.75
	D23	10	0.67	2	0.136	19	1.27	31	2.07
	D24	23	1.77	0	0	69	5.31	92	7.08
	D25	10	0.71	0	0	17	1.21	27	1.93
	Total	**380**	**5.51**	**2**	**0.03**	**459**	**6.65**	**841**	**12.19**
2017	D20	11	0.35	0	0	6	0.19	17	0.55
	D21	2692	134.6	0	0	246	12.3	2938	146.90
	D23	4	0.13	0	0	1	0.03	8	0.27
	D24	0	0	0	0	34	1.17	34	1.17
	D25	2	0.06	0	0	3	0.1	5	0.16
	Total	**2709**	**19.21**	**0**	**0**	**290**	**2.06**	**3002**	**21.29**
2020	D20	3	0.10	0	0	9	0.30	12	0.40
	D21	5	0.17	0	0	1	0.03	6	0.20
	D23	5	0.17	0	0	0	0	5	0.17
	D24	7	0.23	1	0.03	3	0.10	10	0.33
	D25	12	0.40	0	0	7	0.23	19	0.63
	Total	**32**	**0.21**	**1**	**0.007**	**20**	**0.13**	**52**	**0.35**

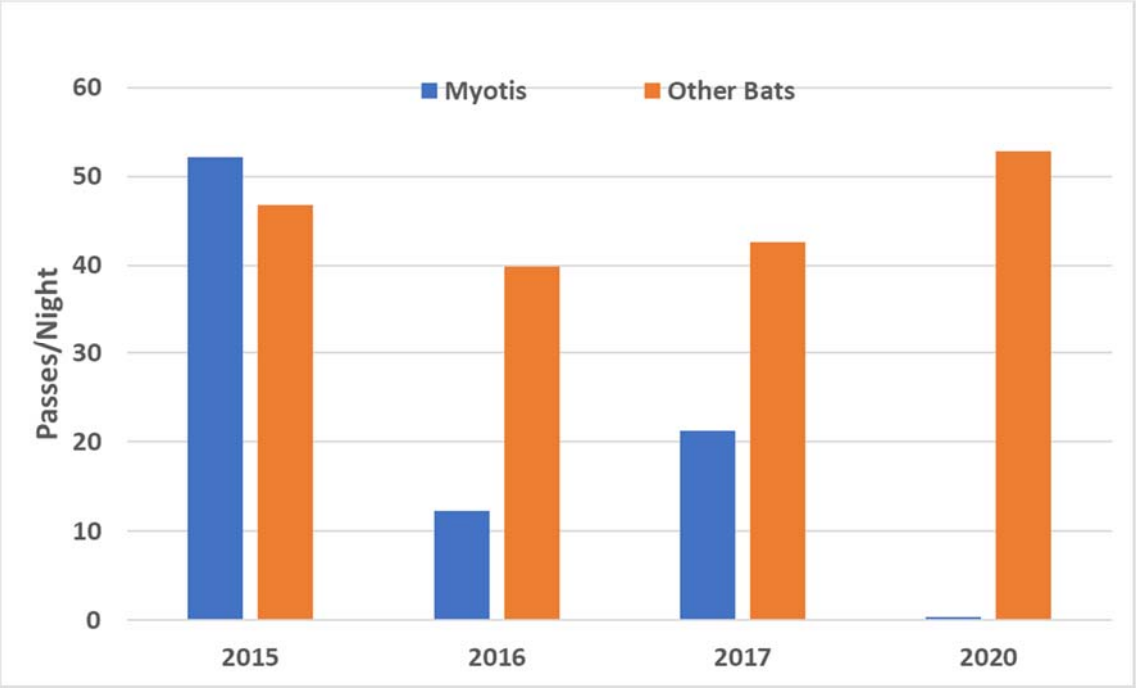

Figure 6. Total passes of Species at Risk bats (*Myotis* species) and other bats 2015 to 2020. Notes: All monitoring locations pooled and 2018 data are excluded.

In conclusion, *Myotis* were detected at all monitoring stations in 2020 but numbers have declined substantially since 2015 at all five stations. Other bat species (non *Myotis*) did not show the same decline. The decline in *Myotis* is consistent with declines across eastern North America caused by White Nose Syndrome rather than localized mine related impacts. Comparing control and impact sites is difficult due to differences in habitat between stations (*Myotis* numbers were consistently highest at one monitoring site (D21) between 2015 and 2017, probably due to better foraging habitat) and the fact that data from a stationary recorder cannot distinguish if many bats are present or if a single bat is making multiple passes.

4 LITERATURE CITED

Catton, T. 2020. Quantitative analysis of the Superior National Forest's mobile acoustic surveys for bats 2010-2020 using Kaleidoscope Pro software. USDA Forest Service, Superior National Forest, 8901 Grand Ave Pl, Duluth, MN 55808.

White-Nose Syndrome Response Team. 2021. White Nose Syndrome. Website: https://www.whitenosesyndrome.org/where-is-wns

Wood. 2019. New Gold Inc. Rainy River Mine. 2015 - 2018 Bat Acoustic Monitoring Report Per Provincial Environmental Assessment Notice of Approval Condition 6 TC111504. Unpublished report prepared for New Gold Inc.

5 APPENDICES

Appendix 1. Coordinates of bat monitoring stations.

Station	Recorder	Recorder Type	Easting	Northing	Notes
D20	SMU01406	MiniBat	421507	5409192	Access through the west gate. Fence row beside hayfield
D21	10	SM4	414676	5407063	Access off Neilson Rd off Hwy 617
D23	12	SM4	423985	5414524	Richardson Road
D24	11	SM4	415545	5425299	Access off Mathieu Rd (off Strachan Rd)
D25	SMU01366	MiniBat	429537	5408962	Access off Teeple Rd. Inside the gate.

Appendix 2. Bat recorder data, June 2 to July 2 2020, Rainy River Project.

Station	Date	Big Brown	Red	Hoary	Silver-haired	Little Brown Myotis	Northern Myotis	Myotis sp.	Unknown	Total
D20	02-Jun			3	6	1			21	31
D20	03-Jun			5	8			1	14	28
D20	04-Jun			4	17				6	27
D20	05-Jun			2	3				15	20
D20	06-Jun			9	1				33	43
D20	07-Jun			5	10				55	70
D20	08-Jun			6	32				74	112
D20	09-Jun			7	7				16	30
D20	10-Jun			27	7				22	56
D20	11-Jun		1	2	1			3	10	17
D20	12-Jun			3	8				11	22
D20	13-Jun			14	6				50	70
D20	14-Jun			71	8				94	173
D20	15-Jun			16	22				54	92
D20	16-Jun		1	14	19	1			73	108
D20	17-Jun			11	38				53	102
D20	18-Jun			8	32			1	30	71
D20	19-Jun		2	8	17				32	59
D20	20-Jun		9	14	8				49	80
D20	21-Jun			21	18				27	66
D20	22-Jun				9			1	31	41
D20	23-Jun		1	22	14	1			24	62
D20	24-Jun			20	26				15	61
D20	25-Jun			22	21				60	103
D20	26-Jun			65	38				41	144
D20	27-Jun		1	17	17			1	54	90
D20	28-Jun			12	13				43	68
D20	29-Jun			28	16				41	85
D20	30-Jun			25	19				71	115
D20	01-Jul			157	41			2	74	274
D20	**Subtotal**	**0**	**15**	**618**	**482**	**3**	**0**	**9**	**1189**	**2316**
D21	02-Jun				10				20	30
D21	03-Jun				19				36	55
D21	04-Jun				14				17	31
D21	05-Jun			2	22				25	49
D21	06-Jun				1				7	8
D21	07-Jun			1	5				6	12

Station	Date	Big Brown	Red	Hoary	Silver-haired	Little Brown Myotis	Northern Myotis	Myotis sp.	Unknown	Total
D21	08-Jun			7	3				6	16
D21	09-Jun			4	1				3	8
D21	10-Jun				4				2	6
D21	11-Jun				3					3
D21	12-Jun				2			1	8	11
D21	13-Jun				29				69	98
D21	14-Jun				13				13	26
D21	15-Jun				19				22	41
D21	16-Jun	1			17	2			18	38
D21	17-Jun	1		1	6				14	22
D21	18-Jun			1	9				17	27
D21	19-Jun			2	39				31	72
D21	20-Jun				73				61	134
D21	21-Jun			1	13				31	45
D21	22-Jun			3	11				18	32
D21	23-Jun			1	8				28	37
D21	24-Jun	1			26				40	67
D21	25-Jun			2	29				19	50
D21	26-Jun				21				52	73
D21	27-Jun			2	56				72	130
D21	28-Jun				16	1			33	50
D21	29-Jun				18				42	60
D21	30-Jun		1	2	33				56	92
D21	01-Jul				9	2			30	41
D21	02-Jul	1			94				70	165
D21	**Subtotal**	**4**	**1**	**29**	**623**	**5**	**0**	**1**	**866**	**1529**
D23	02-Jun					2			1	3
D23	03-Jun	3	1		5	3			2	14
D23	04-Jun	1			5					6
D23	05-Jun				1					1
D23	15-Jun	1								1
D23	**Subtotal**	**5**	**1**	**0**	**11**	**5**	**0**	**0**	**3**	**25**
D24	02-Jun	1		39	19	1			19	79
D24	03-Jun			8	13	1			14	36
D24	04-Jun			83	12	1			34	130
D24	05-Jun			6	15	1		1	7	30
D24	06-Jun			3	8				6	17
D24	07-Jun			1	12				7	20
D24	08-Jun				8				11	19

Station	Date	Big Brown	Red	Hoary	Silver-haired	Little Brown Myotis	Northern Myotis	Myotis sp.	Unknown	Total
D24	09-Jun			11	10				10	31
D24	10-Jun			6	6				5	17
D24	11-Jun			1	10				5	16
D24	12-Jun			1	6				5	12
D24	13-Jun			9	19				20	48
D24	14-Jun			3	11				5	19
D24	15-Jun			10	29				8	47
D24	16-Jun	1		3	4	1			10	19
D24	17-Jun			26	8			1	7	42
D24	18-Jun			13	12				15	40
D24	19-Jun		1	14	2				9	26
D24	20-Jun			2	7				12	21
D24	21-Jun		1	20	20				9	50
D24	22-Jun			2	29			1	12	44
D24	23-Jun	1		23	18				14	56
D24	24-Jun			26	29				32	87
D24	25-Jun			9	11				6	26
D24	26-Jun		2	19	60	1			27	109
D24	27-Jun			11	20				19	50
D24	28-Jun			13	28				14	55
D24	29-Jun			20	12	1	1		14	48
D24	30-Jun			10	7				17	34
D24	01-Jul	1		60	104				60	225
D24	**Subtotal**	**4**	**4**	**452**	**549**	**7**	**1**	**3**	**433**	**1453**
D25	02-Jun		1	2	5				1	9
D25	03-Jun			15	36				3	54
D25	04-Jun			13	26	1		1	3	44
D25	05-Jun			24	17				6	47
D25	06-Jun			7	30			1	22	60
D25	07-Jun			6	43			2	2	53
D25	08-Jun			9	27				3	39
D25	09-Jun			15	13				1	29
D25	10-Jun			5	10			1	2	18
D25	11-Jun			8	10				3	21
D25	12-Jun			8	16				3	27
D25	13-Jun			17	32				11	60
D25	14-Jun	1		15	23				4	43
D25	15-Jun	1		18	17				9	45
D25	16-Jun	1		29	78				16	124

Station	Date	Big Brown	Red	Hoary	Silver-haired	Little Brown Myotis	Northern Myotis	Myotis sp.	Unknown	Total
D25	17-Jun	1	1	13	83	1			30	129
D25	18-Jun	2		45	111	1			15	174
D25	19-Jun		1	41	112				11	165
D25	20-Jun	2		13	25				5	45
D25	21-Jun			67	45	1			1	114
D25	22-Jun			15	60	2			9	86
D25	23-Jun			8	85				4	97
D25	24-Jun			23	43	1			2	69
D25	25-Jun	2		48	75	2			11	138
D25	26-Jun	1		73	43				7	124
D25	27-Jun	3		52	110				5	170
D25	28-Jun	1		37	72				8	118
D25	29-Jun	1		16	74	2		1	8	102
D25	30-Jun			50	86				8	144
D25	01-Jul			41	64	1			12	118
D25	02-Jul		4	34	116			1	25	180
D25	**Subtotal**	**16**	**7**	**767**	**1587**	**12**	**0**	**7**	**249**	**2644**
	Total	**29**	**28**	**1866**	**3252**	**32**	**1**	**19**	**2740**	**7967**