



## MEMORANDUM

**TO** Rick Schryer - Fortune Minerals Limited

**DATE** 17 February 2012

**CC** Jen Gibson

**FROM** John Virgl, Damian Panayi, Cam Stevens

**PROJECT No.** 09-1373-1004.9600

**UNDERTAKING #5**  
**ASSESSMENT OF IMPACTS TO UPLAND BIRD SPECIES AT RISK**

During Day 2 of the Technical Sessions for the NICO Project, the Mackenzie Valley Environmental Impact Review Board and Environment Canada asked Fortune Minerals Limited (Fortune) to provide a more detailed assessment of the direct and indirect impacts of the NICO Project on SARA listed upland breeding birds (i.e., common nighthawk, olive-sided fly catcher, and rusty blackbird) and upland breeding bird habitat based on their distribution in the regional study area and the proposed mine footprint.

Fortune would like to emphasize that the primary pathways assessed for direct and indirect changes to habitat for upland bird species are also relevant to upland bird species at risk (SAR). Further, a number of conservative steps were implemented in the assessment so that impacts were not underestimated for SAR. For example, the NICO Project Lease Boundary was used to calculate direct habitat loss for upland breeding birds instead of the smaller anticipated NICO Project footprint (Section 15.4.5 of the Developer's Assessment Report [DAR]). The assessment was also based, in part, on a rigorous database from sites sampled across the regional study area (RSA) that were representative of available habitat types and multiple years (5 years). Detailed information of sampling efforts was provided in the wildlife baseline report (Annex D, Section 2.2).

During baseline studies of upland breeding birds from 2005 through 2009, upland bird SAR observed in the RSA included common nighthawk, olive-sided flycatcher, and rusty blackbird. The percentage of total upland breeding bird observations (of about 1795 observations) that included common nighthawk = 0.05% (1 observation), olive-sided flycatcher = 0.30% (7 observations) and rusty blackbird = 0.2% (4 observations). In other words, encounters of SAR species were relatively low during baseline surveys. As well, the SAR were not observed every year during surveys so they may not necessarily be regular residents of the RSA.

Approximately 60 to 163 sites (or plots) were sampled each year during baseline studies. Species at risk were recorded on 12 plots within and in close proximity to the NICO Project Lease Boundary. Of the 12 plots, 9 survey plots were within the NICO Project Lease Boundary and the remaining 3 plots were within 1 kilometre of the anticipated mine footprint. None of the SAR was observed at plots associated with the NICO Project Access Road (NPAR). These SAR were observed in bedrock open conifer, burn, coniferous spruce, deciduous aspen, shrubland, and treed fen habitats (Table 1).



## MEMORANDUM

**Table 1: Upland Bird Species At-Risk Density Estimates (mean per hectare  $\pm$  1 SE) Observed in the NICO Regional Study Area, 2005 to 2009**

SAR Bird Species	Bedrock Open Conifer (113 plots)	Burn (26 plots)	Coniferous Spruce (164 plots)	Deciduous Aspen (18 plots)	Shrubland (9 plots)	Treed Fen (72 plots)
Common nighthawk	0.01 $\pm$ 0.01	0	0	0	0	0
Olive-sided flycatcher	0	0.04 $\pm$ 0.04	0.01 $\pm$ 0.01	0.01 $\pm$ 0.01	0	0.03 $\pm$ 0.03
Rusty blackbird	0	0	0	0	0.38 $\pm$ 0.27	0

As described in Section 15.4.5.1.2 of the DAR for upland birds, relative to baseline conditions, development of the NICO Project is expected to decrease the amount of bedrock open conifer, burn, coniferous spruce, deciduous aspen, shrubland, and treed fen in the RSA by approximately 5.5%, 2.1%, 1.3%, 2.4%, 1.5%, and 0.3%, respectively. The cumulative decreases in bedrock open conifer, burn, coniferous spruce, deciduous aspen, shrubland, and treed fen from reference conditions to future cases are 6.4%, 2.2%, 1.6%, 2.7%, 1.9%, and 0.5%, respectively. Multiplication of baseline habitat-specific SAR bird densities (Table 1) by the absolute amount of direct habitat loss associated with the NICO Project footprint indicates the potential to remove approximately 5 common nighthawk, 12 olive-sided flycatcher, and 3 rusty blackbird individuals from the regional population. These estimates represent potential decreases in the carrying capacity of the RSA landscape to support populations of these species (assuming that the availability of breeding habitat is a limiting factor for populations).

In addition to direct habitat effects, changes to habitat quality from the NICO Project (including the NPAR) have the potential to indirectly affect the population size and distribution of SAR birds. The approach used to quantify direct and indirect effects in the assessment considered changes to the relative abundance (density) of birds in each habitat from the NICO Project across the total available habitat in the RSA. A disturbance coefficient was applied to habitats within a 1 kilometre zone of influence (ZOI) from the NICO Project. The modifier reduced bird densities within the ZOI (DAR Figure 15.4-17). It is important to note that estimates of bird abundance for each habitat type in the analysis in the DAR included a proportion of SAR bird densities observed during baseline studies.

The relative habitat-specific changes in common nighthawk, olive-sided flycatcher, and rusty blackbird abundance were similar to values described for total upland breeding birds (see Table 2 below versus Table 15.4-10 in the DAR). For example, incremental decreases from the NICO Project in the abundance of common nighthawk from indirect effects (e.g., sensory disturbances) and direct effects (i.e., the footprint) will be approximately 6.1%; whereas cumulative changes from all developments will be about 8.5% (Table 2). Incremental changes to abundance of rusty blackbird from indirect and direct effects will be approximately 2.1%; whereas cumulative changes from previous, existing, and reasonably foreseeable developments will be about 3.6% (Table 2). For olive-sided flycatcher, incremental habitat-specific changes to abundance may range from 3.4% (deciduous aspen) to 6.8% (burn). Cumulative habitat-specific changes in abundance may range from 5.2% (coniferous spruce) to 7.6% (treed fen). The incremental and cumulative decrease in abundance of olive-sided flycatchers from direct and indirect habitat effects across all habitats is predicted to be 4.1% and 5.5%, respectively (Table 2).



## MEMORANDUM

**Table 2: Relative Changes from Direct and Indirect Effects to Abundance of Species At-Risk Bird Species in the Regional Study Area from Reference to Reasonably Foreseeable Developments**

Indirect Effects								
Indirect Effects to Bird Abundance Per Habitat Type	Reference Area (ha)	Reference Abundance			% Change Reference to 2010 Baseline	% Change 2010 Baseline to Application	% Change Application to Future	% Cumulative Change from Reference
		CONI	OSFL	RUBL				
Bedrock-Open Conifer	8,859	86	0	0	-1.5	-0.5	<-0.1	-2.0
Shrubland	556	0	0	206	<-0.1	-0.7	-1.4	-2.1
Burn	6,921	0	270	0	-0.1	-4.7	<-0.1	-4.7
Coniferous Spruce	50,720	0	1974	0	-0.2	-2.4	-1.1	-3.7
Deciduous Aspen	753	0	29	0	-0.3	-1.1	-2.3	-3.6
Treed Fen	1629	0	48	0	<-0.1	-4.0	-3.2	-7.2
<i>Subtotal of all habitats for OSFL</i>	<i>60,023</i>	<i>NA</i>	<i>2,321</i>	<i>NA</i>	<i>-0.2</i>	<i>-2.7</i>	<i>-1.0</i>	<i>-3.9</i>
Direct Effects								
Direct Effects to Bird Abundance Per Habitat Type	Reference Area (ha)	Reference Abundance			% Change Reference to 2010 Baseline	% Change 2010 Baseline to Application	% Change Application to Future	% Cumulative Change from Reference
		CONI	OSFL	RUBL				
Bedrock-Open Conifer	8,859	86	0	0	-0.9	-5.6	<-0.1	-6.5
Shrubland	556	0	0	206	<-0.1	-1.4	-0.1	-1.5
Burn	6,921	0	270	0	<-0.1	-2.1	<-0.1	-2.1
Coniferous Spruce	50,720	0	1974	0	-0.2	-1.3	-0.1	-1.5
Deciduous Aspen	753	0	29	0	<-0.1	-2.3	-0.1	-2.5
Treed Fen	1629	0	48	0	<-0.1	-0.3	-0.1	-0.4
<i>Subtotal of all habitats for OSFL</i>	<i>60,023</i>	<i>NA</i>	<i>2,321</i>	<i>NA</i>	<i>-0.1</i>	<i>-1.4</i>	<i>-0.1</i>	<i>-1.6</i>

CONI = Common Nighthawk; OSFL = Olive-sided Flycatcher; RUBL = Rusty Blackbird

In summary, direct and indirect effects from the NICO Project are expected to reduce the abundance of common nighthawk, olive-sided flycatcher, and rusty blackbird by less than or equal to 6.1% relative to 2010 baseline conditions. Cumulative direct and indirect impacts from the NICO Project and previous, existing, and reasonably foreseeable future developments are expected to decrease SAR bird abundance by 8.5% for common nighthawk, 5.5% for olive-sided flycatcher, and 3.6% for rusty blackbird. While direct habitat loss may be permanent, indirect effects should be reversible within 5 to 10 years following closure (long-term duration). The geographic extent of effects is local for the NICO Project and regional for all developments included in the assessment. As with the assessment for all upland birds in the DAR, the direct and indirect effects from habitat alteration are predicted to not have an adverse significant impact on upland species at risk bird populations.

C:\Users\jgibson\Documents\SharePoint Drafts\Undertaking 05 Upland Bird Species At Risk.docx