

**Species Status 2014 Update in
Northwestern Alberta for the DMI FMAs
FINAL**



Prepared for:

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LETTER OF TRANSMITTAL

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February 02, 2014

Mr. Jim Witiw
Forest Resource Coordinator
Daishowa-Marubeni International Ltd.
Postal Bag 6500, Pulp Mill Site
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Dear Mr. Witiw:

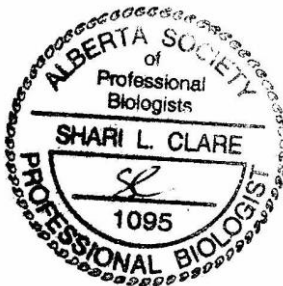
Re: DMI Species Status 2014 Update

At your request, Fiera Biological Consulting Ltd. has completed an update of the status of 2598 species under IUCN, COSEWIC, SARA, ACIMS, the Alberta General Status of Wildlife, and the Alberta Wildlife Act in the DMI forest management areas (FMA). We are pleased to provide you with the draft report for your consideration, and an attached database containing the most updated species status for 2598 species relevant up to December 17, 2014. If you have any questions or comments regarding this report or its conclusions, please contact the undersigned at your convenience.

Sincerely,
FIERA BIOLOGICAL CONSULTING LTD.



Shari Clare, PhD, P.Biol
Director, Sr. Biologist



Renee Howard, BSc
Jr. Biologist

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1.0 Introduction

Daishowa-Marubeni International Ltd. (DMI) has created a watch list of all species at risk in their Forest Management Area (FMA) in order to better manage wildlife habitat. The initial database was created in 1999 containing 1072 species for the Detail Forest Management Plan (Stelfox and Wynes 1999). Since then, the inventory of northern Alberta species expected to occur in the DMI FMAs has grown by some 1500 species. The growth of this species inventory is attributed to improved information on the regional distributions of many plant and insect communities, as well as a detailed biotic inventory of plants, arthropods, and gastropods that is occurring through the Ecosystem Management Emulating Natural Disturbance (EMEND) research project in northwest Alberta (J. Witiw pers. comm.).

The database containing all species known to occur in the FMA is updated every few years to include changes and additions by international, national, and provincial designating bodies. This database tracks species status under the International Union for Conservation of Nature (IUCN), Committee on the Status of Endangered Wildlife in Canada (COSEWIC), Species at Risk Act (Canada) (SARA), the Alberta Wildlife Act, the Alberta General Status of Wildlife, and the Alberta Conservation Information Management System (ACIMS, formerly ANHIC). One of the primary objectives of this reference product is to improve awareness about sensitive species within the region, and to promote opportunities for the implementation of best management practices for species-at-risk.

This report includes the updated, current status (as of December 2014) and summarizes results for 2598 species that occur in DMI's FMA, including:

- Summaries of overall species status by risk category
- Status breakdowns for each taxa by tracking agency
- An attached updated species database for species in northwestern Alberta.

In addition, the 2014 update identifies tracked ecological communities within the natural sub-regions pertinent to the DMI FMAs. This information, along with an updated Environmentally Significant Area (ESA) compilation will lend itself to increased precision for long-range planning and environmental protection.

2.0 Methods

A total of 2598 species are known or suspected to occur on DMI's FMA. The DMI species database of these 2598 species was updated to include changes to ranking by international, national, provincial designating agencies as of December of 2014. Databases with the most recent species lists and ranking were obtained for each designating body (IUCN (International Union for Conservation of Nature Global Species Programme Red List Unit Version 2014.3), COSEWIC (Committee on the Status of Endangered Wildlife in Canada Candidate Wildlife Species and Wildlife Species Search), SARA (Government of Canada Species at Risk Public Registry), the General Status of Alberta Wildlife (Alberta Environment and Sustainable Resource Development Wild Species Status Search), ACIMS (Alberta Conservation Information Management System 2014), and the Alberta Wildlife Act (Alberta Environment and Sustainable Resource Development 2014)) and were downloaded from each agency's website. Conservation status assessments have been performed for most vertebrate species, and to a lesser extent many plant species. However, most other taxa have not been adequately



assessed. In particular, no status assessments exist for mites (Acariformes), the majority of bees/wasps (Hymenoptera; except for bumble bees), spiders (Araneae), or fungi. The taxonomic groups assessed to date for each designation body is shown below in Table 1.

For each of the 2598 species that DMI tracks, a relative degree of species risk is assessed in three categories (Figure 1):

- 1) Lacking Information - species has not been assessed by the designated agency, or insufficient information exists to perform an assessment;
- 2) Considered Stable - species is considered not at risk due to stable or increasing populations;
- 3) Some Level of Risk - species are identified as having some risk associated due to declining populations by one or more designating bodies.

The rankings for the 6 designation bodies assigned to each DMI category are identified in Figure 1. The classification used for COSEWIC rankings in the 2014 update includes both COSEWIC priority rankings (as identified in the 2012 report) in addition to the current status of wildlife species assessed by COSEWIC. The COSEWIC and the Species at Risk (SARA) assessments are complementary, but non-overlapping processes. Species that have been given a status under COSEWIC are only then considered for a SARA rank. COSEWIC also prioritizes (Low, Mid, or High) species for detailed status assessment to be completed by COSEWIC. COSEWIC ranked species are either waiting to be assigned a SARA rank, or have undergone the complete SARA assessment and are assigned a SARA rank (Special Concern, Threatened, Endangered, Extinct), or have been determined to be Not at Risk.



Table 1. Taxonomic groups assessed by each designation body.

Taxonomic group	IUCN ¹	COSEWIC/SARA ²	Alberta Wildlife Act ³	Alberta General Status of Wildlife ⁴	ACIMS ⁵
Birds	✓	✓	✓	✓	✓
Mammals	✓	✓	✓	✓	✓
Amphibians	✓	✓	✓	✓	✓
Reptiles	✓	✓	✓	✓	✓
Fish	✓	✓	✓	✓	✓
Arthropods					
Spiders (Araneae)	✓	✓		✓	
Dragonflies and Damselflies (Odonata)	✓			✓	✓
Tiger Beetle (Carabidae)		✓		✓	✓
Ground Beetles (Carabidae)		✓		✓	✓
Lady Beetles (Coccinellidae)		✓		✓	✓
Butterflies (Lepidoptera)	✓	✓		✓	✓
Moths (Lepidoptera)	✓	✓		✓	✓
Bumble Bees (Hymenoptera)	✓	✓		✓	✓
Molluscs	✓	✓		✓	✓
Vascular Plants	✓	✓		✓	✓
Mosses	✓	✓		✓	✓
Liverworts					✓
Lichens	✓	✓		✓	✓

¹ Data downloaded from IUCN Red List of Threatened Species database November 2014

² COSEWIC species statuses updated November 2014, COSEWIC priority species updated October 2014, SARA Schedule lists updated December 2014

³ Updated July 2014

⁴ No change from 2012 report, last updated Fall 2010

⁵ Updated May 2014



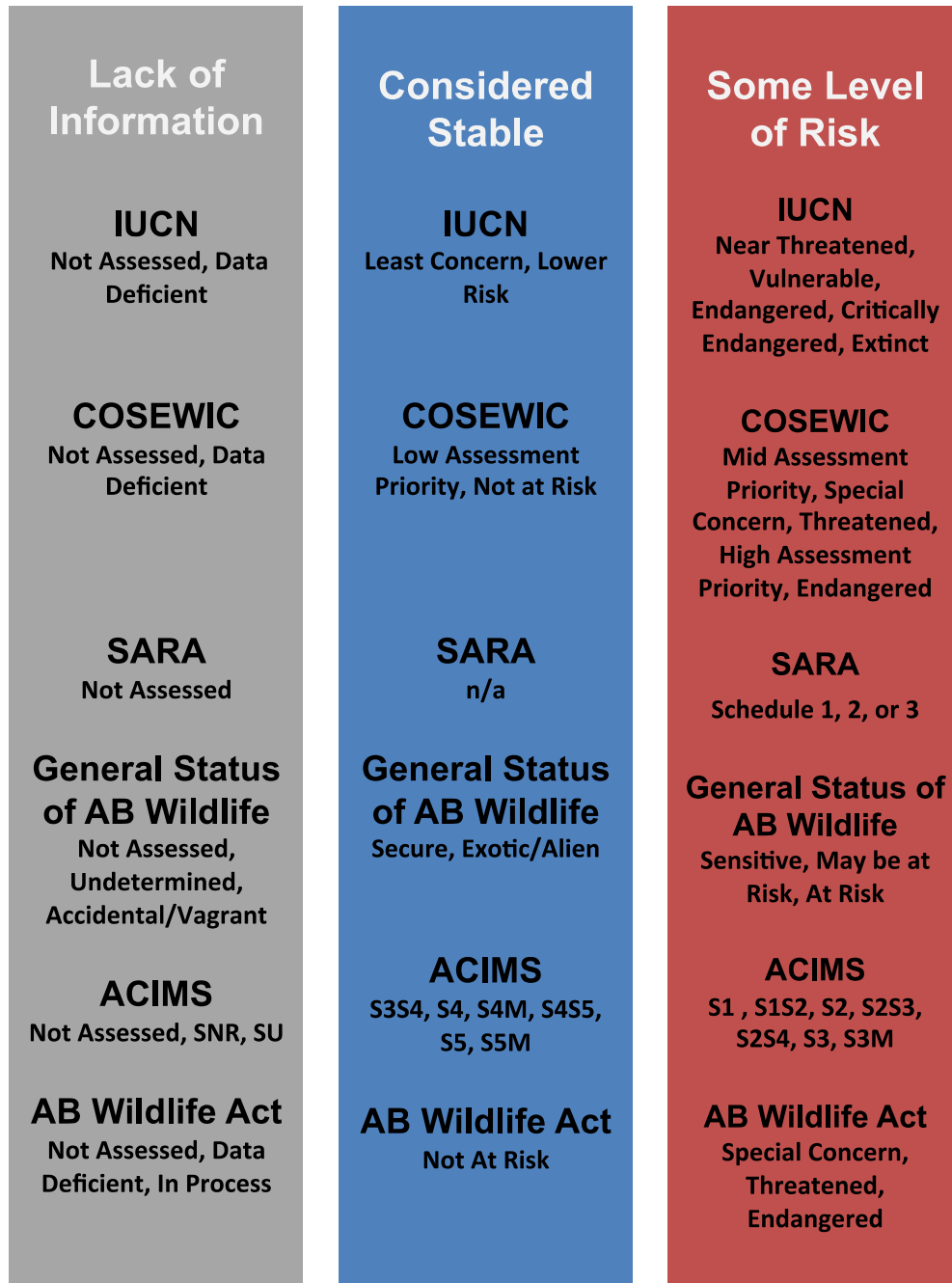


Figure 1. Classification within each designating body assigned to the three DMI Status Categories.



3.0 Overall Species Summaries

Under most designation agencies, all vertebrate species in northwestern Alberta have been assessed, and are ranked as either “Considered Stable, or “Some Level of Risk” (Figure 2-4). Herptiles have the greatest percentile of species at risk (80%), followed by Fish, Avifauna, and Mammals at 35%, 28%, 23%, respectively (Figure 2). For non-vertebrate groups, 45%, 29%, and 18% of Mosses & Liverworts, Lichens, and Vascular Plants, respectively, have some level of risk. Finally, all Fungi species, and most Arthropod species (76%) are lacking information.

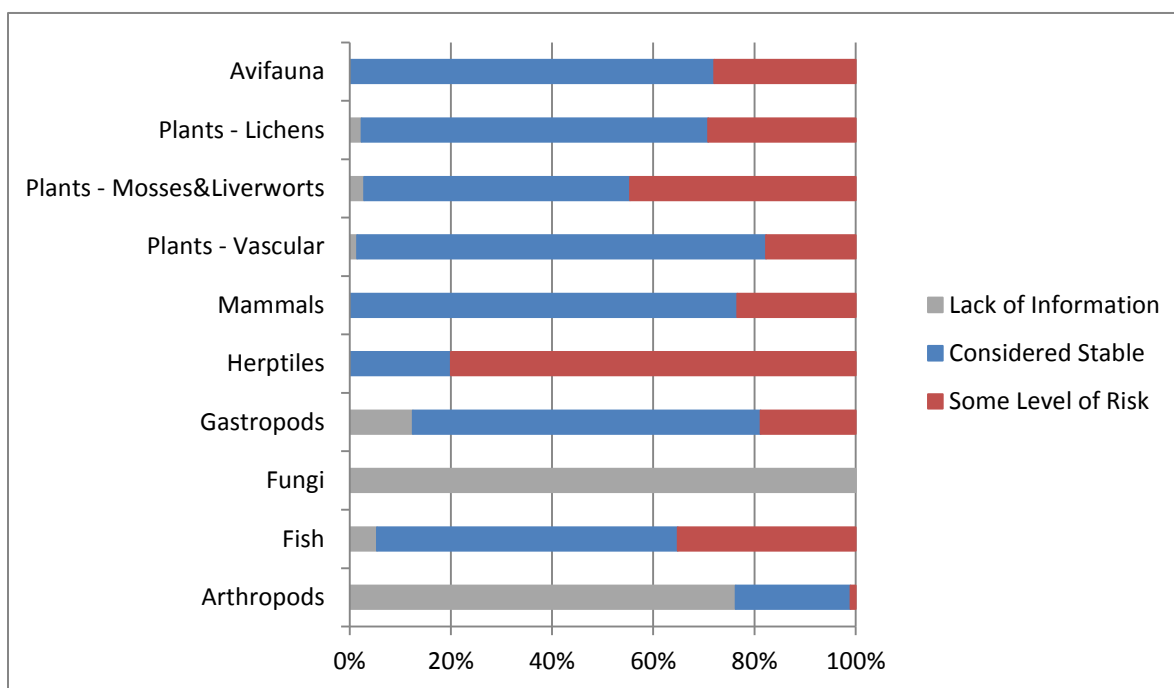


Figure 2. DMI Status for All Species - % of NW Alberta Species in Each Status Category (2014 update)

The DMI category “Some Level of Risk” is considered two different ways for total species number: 1) where ACIMS S3 species are included (as identified in Figure 1) and 2) excluding all ACIMS S3 category species. In the latter analysis, S3 species are categorized as Considered Stable. When considering all status rankings (i.e. including ACIMS S3 species), vascular plants (95), mosses and liverworts (78), and birds (69) are the taxa with the greatest number of species with Some Level of Risk (Figure 3). The pattern is the same when S3 rankings are excluded from the ‘Some Level of Risk’ category and categorized as ‘Considered Stable’ (Figure 4). In this case, vascular plants, mosses and liverworts, and avifauna have the largest number of species with Some Level of Risk at 52, 42, and 66 species respectively.

The total number of species showing some level of risk (including S3 species) is 328. The total number of species showing some level of risk (excluding S3 species) is 218 species. These results follow similar trends to both 2010 and 2012 Status Assessment Updates. The number of species showing Some Level of Risk (including S3 species) in 2010 and 2012 was 329 and 335, respectively. This slight decrease in species with Some Level of Risk in 2014 is mainly due to a reduction of vascular plants considered as Some Level of Risk. In 2014, 4 species were removed from Some Level of Risk and added to the Considered Stable category. Since 2007,



the number of species which may be at risk has increased by nearly 50% (in the 2007 report 41 vascular plants, 26 moss/liverworts, 12 lichen, 8 mammals, 7 herptiles, 10 fish, 39 birds, and 10 arthropod species were ranked as Some Level of Risk (153 total). This increase is largely due to increased efforts by designation organizations to assess non-vertebrate taxa (primarily vascular plants, non-vascular plants, and lichens), but also reflects increased knowledge and changes in status for many vertebrate species. In particular, the number of avian species with the potential to occur in the DMI FMA has increased by nearly 75%.

The 2014 update includes the following changes as identified in the accompanying database DMI-SpeciesStatusUpdateDatabaseFINAL_2014. When considering IUCN designation, the status of 31 species were updated or assessed for the first time between October 2012 and November 2014. The conservation status for 5 species was changed by COSEWIC since the 2012 report. In December 2014, two bat species (*Myotis* species) were added to Schedule 1 listed as Endangered under the federal SARA legislation. The Alberta government has made four major changes to the Alberta Wildlife Act recently (October 2014), where western grebes, rainbow trout, and bull trout went from Special Concern or In Process status in 2012 to a Threatened status in 2014. As well, trumpeter swans decreased in status ranking from Threatened in 2012 to a Species of Special Concern in 2014. The Alberta General Status of Wildlife has not updated any species status rankings since 2010. Lastly, the status designations of 11 species under ACIMS have been updated since the 2012 report. These changes mostly consisted of 2012 SNR ranks updating to S5 status. However, it is important to note that a complete review and update of all species elements and rankings in ACIMS is expected to commence in 2015.

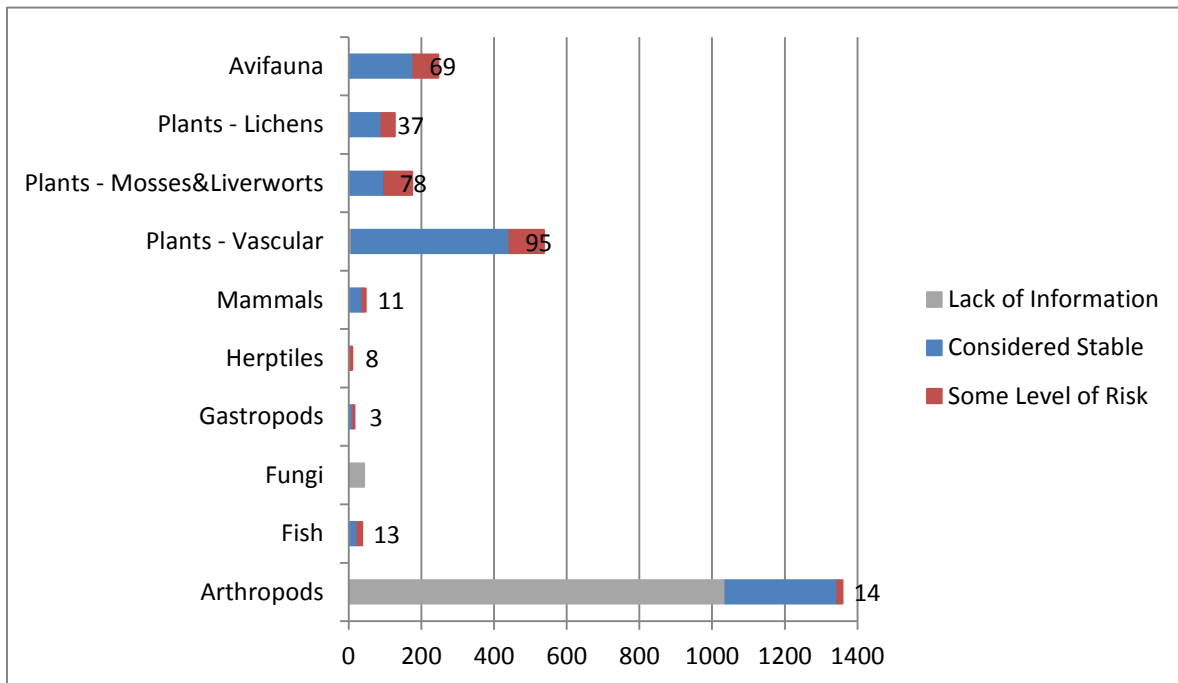


Figure 3. DMI Status for all NW Alberta Species expected to occur in the DMI FMAs. This assessment includes all species ranked as “S3” or “S3M” by ACIMS. Numbers at the end of each bar graph represent the number of species ranked as Some Level of Risk.



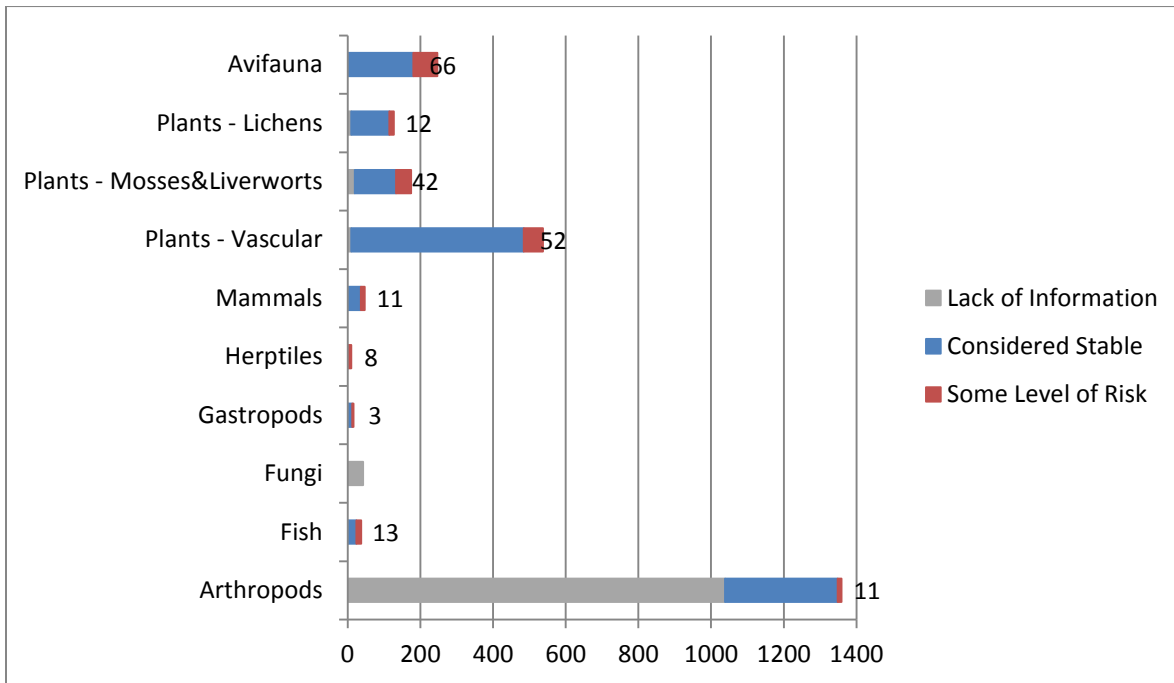


Figure 4. DMI Status for all NW Alberta Species expected to occur in the DMI FMAs. This assessment excludes all species ranked as “S3” or “S3M” by ACIMS from the Some Level of Risk category. Numbers at the end of each bar graph represent the number of species ranked as Some Level of Risk.

4.0 Legislative Summaries

Under federal (SARA; Figure 5) and provincial legislation (Alberta Wildlife Act; Figure 6), 18 and 9 species are protected, respectively. These only include species that are regulated under each of these acts (species listed under Schedule 1 of the SARA registry and species listed as Threatened or Endangered under the provincial registry). There is an additional 1 species listed under Schedule 2 of the SARA registry, and 9 species are listed as Special Concern or In Process under the provincial ranking. The species listed in Schedule 2/3 or as Special Concern/In Process are identified as being of concern, but they are not regulated by legislation.



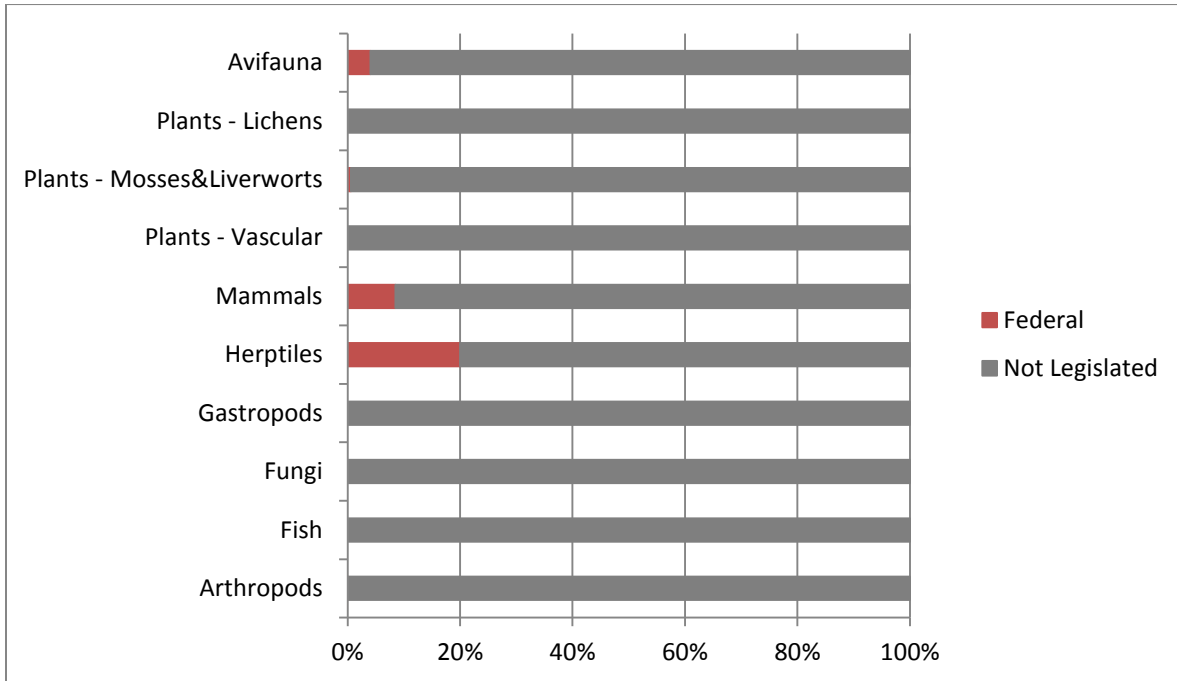


Figure 5. Percentage of NW Alberta species expected to occur in the DMI FMAs that are protected by Federal Legislation broken down by taxonomic group.

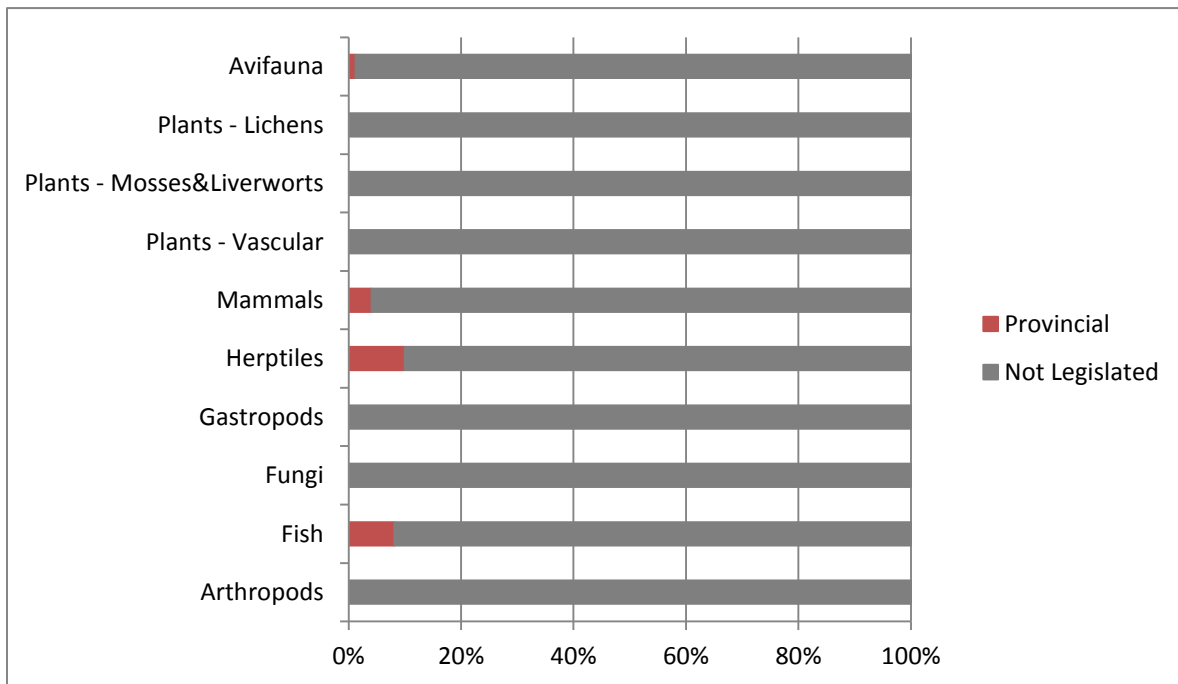


Figure 6. Percentage of NW Alberta species expected to occur in the DMI FMAs that are protected by Provincial Legislation broken down by taxonomic group.



5.0 Taxonomic Summaries

The number of species in each of the three DMI Status Categories (Lacking Information, Considered Stable, and Some Level of Risk) are presented in Figures 7-16 for each taxonomic group broken down by the six designating bodies. The majority of arthropod species are categorized as lacking information, but ACIMS classifies 11 species as having Some Level of Risk (Figure 7). ACIMS and the Alberta Status of Wildlife Species (both provincial designating organizations) identify 8 and 9 fish species (Figure 9) and 31 and 53 avian species, respectively (Figure 8), as having Some Level of Risk.

No fungi species have been assessed by any of the six designation bodies (Figure 10). Similarly, most gastropod species are lacking information, with only 3 and 2 species classed as Some Level of Risk under the Alberta Status of Wildlife Species, and ACIMS, respectively (Figure 11). Herptiles are assessed under all 6 designating bodies, with the number of species designated as Some Level of Risk ranging from 1 (for IUCN) to 7 species (Alberta General Status of Wildlife; Figure 12). The pattern is similar for mammals, where all designating bodies have categorized mammal species in northwestern Alberta. Number of mammal species categorized as having Some Level of Risk ranges from 1 (IUCN) to 10 species (Alberta General Status of Wildlife; Figure 13). ACIMS and the Alberta General Status of Wildlife are the only two designation bodies that have assessed lichens species (Figure 14). Moss and liverwort species have mostly only been assessed by ACIMS and the Alberta General Status of Wildlife, where 73 and 25 species, respectively, have been identified as having Some Level of Risk. Federally (COSEWIC and SARA), one moss and lichen species has been categorized as Some Level of Risk (Figure 15). Vascular plant species have mostly only been assessed by the Alberta Status of Wildlife Species and ACIMS where 48 and 93 vascular plants species, respectively, were categorized as Some Level of Risk (Figure 16). Overall, the majority of northwestern Alberta vascular plant species (79 – 83%) were Considered Stable under provincial rankings.



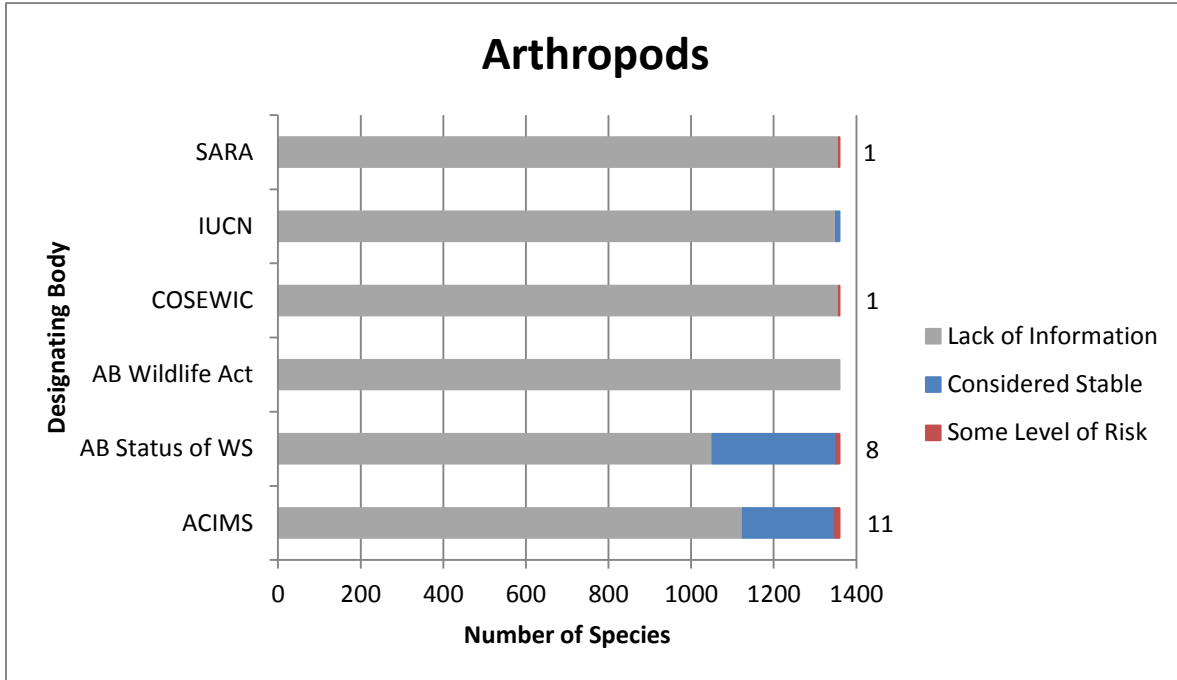


Figure 7. Number of NW Alberta arthropod species (1359 identified species total) by DMI Status Category for each designating body. Numbers at the end of each bar graph represent the number of species with a status of Some Level of Risk.

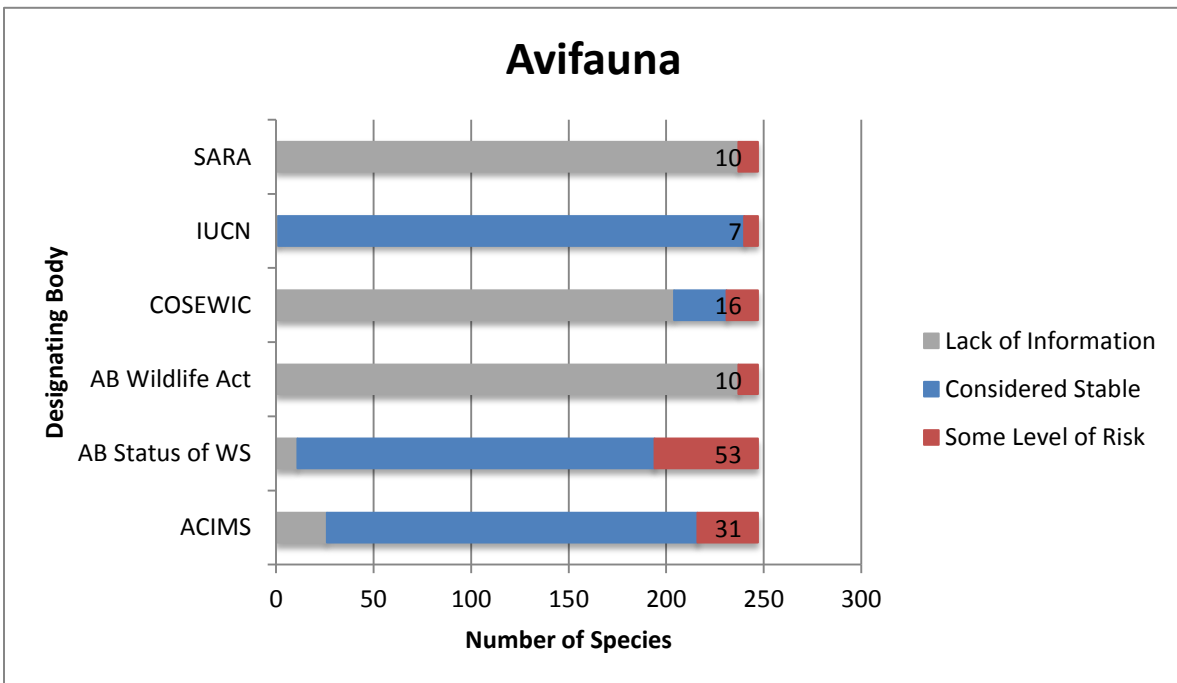


Figure 8. Number of NW Alberta Bird species (247 avifauna species total) by DMI Status Category for each designating body. Numbers at the end of each bar graph represent the number of species with a status of Some Level of Risk.



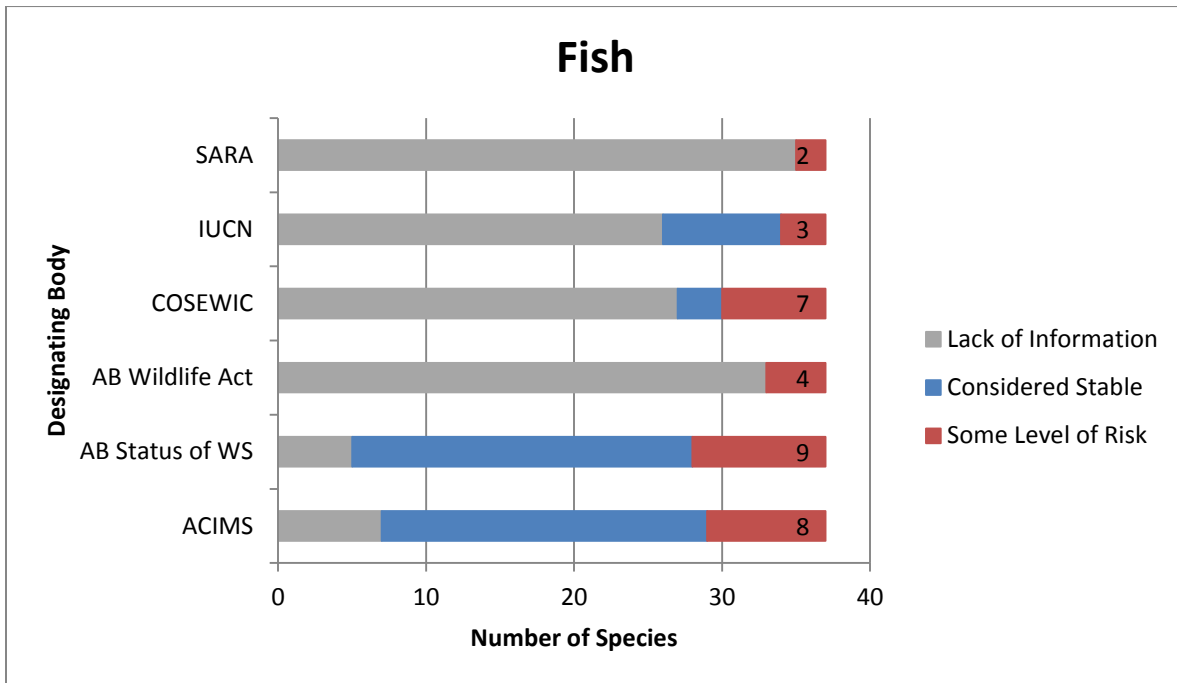


Figure 9. Number of NW Alberta Fish species (37 fish species total) by DMI Status Category for each designating body. Numbers at the end of each bar graph represent the number of species with a status of Some Level of Risk.

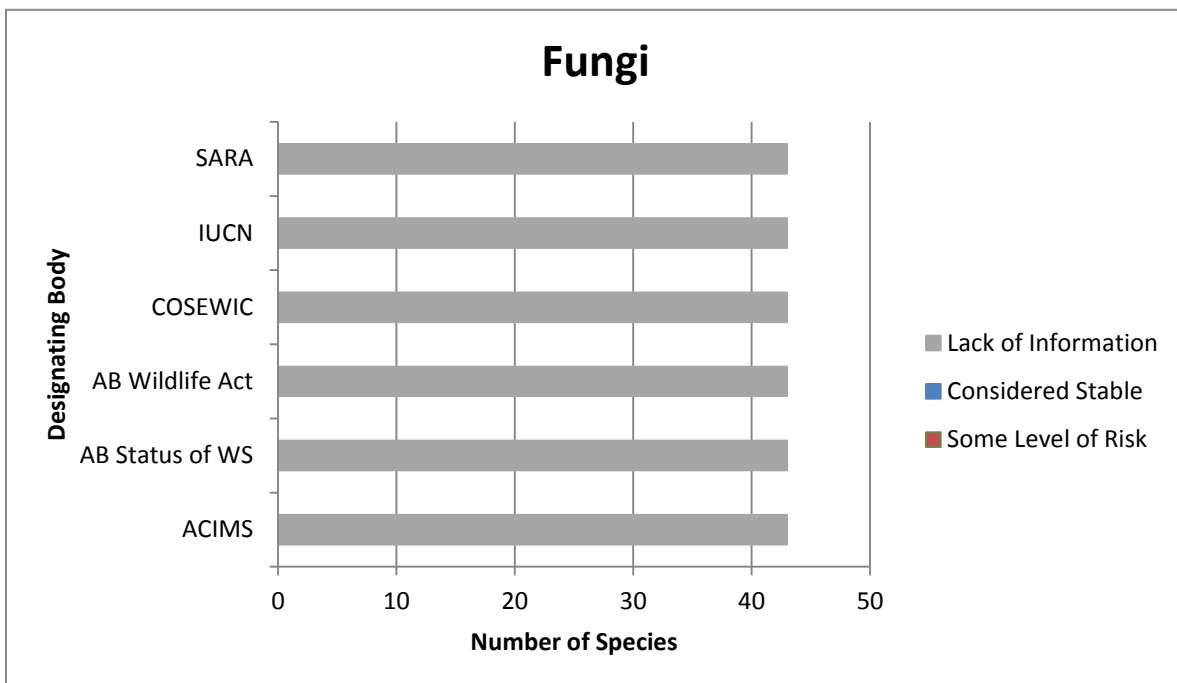


Figure 10. Number of NW Alberta Fungi species (43 species total) by DMI Status Category for each designating body.



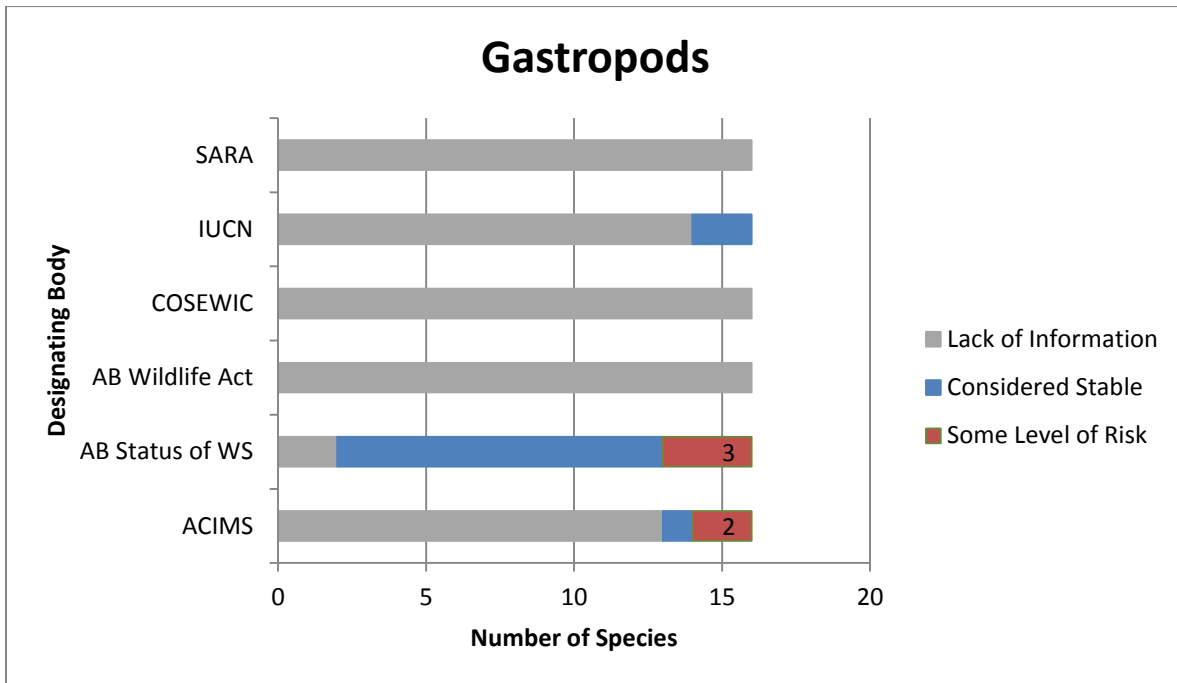


Figure 11. Number of NW Alberta Gastropod species (16 gastropod species total) by DMI Status Category for each designating body. Numbers at the end of each bar graph represent the number of species with a status of Some Level of Risk.

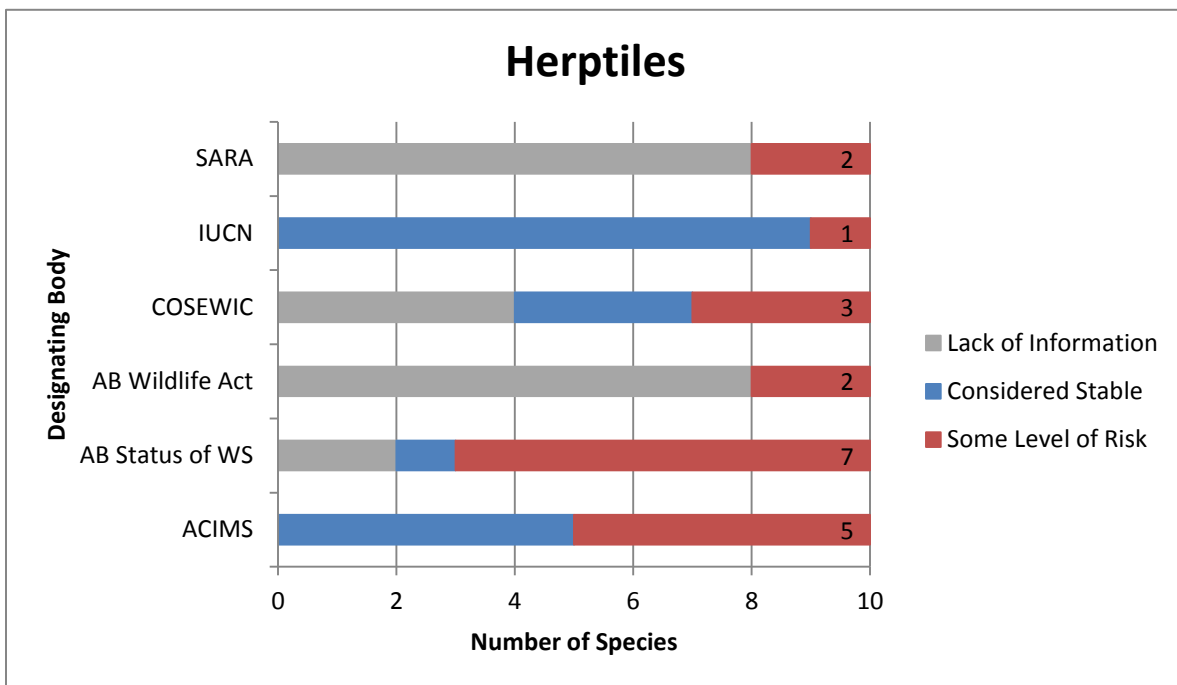


Figure 12. Number of NW Alberta Herptile species (10 herptile species total) by DMI Status Category for each designating body. Numbers at the end of each bar graph represent the number of species with a status of Some Level of Risk.



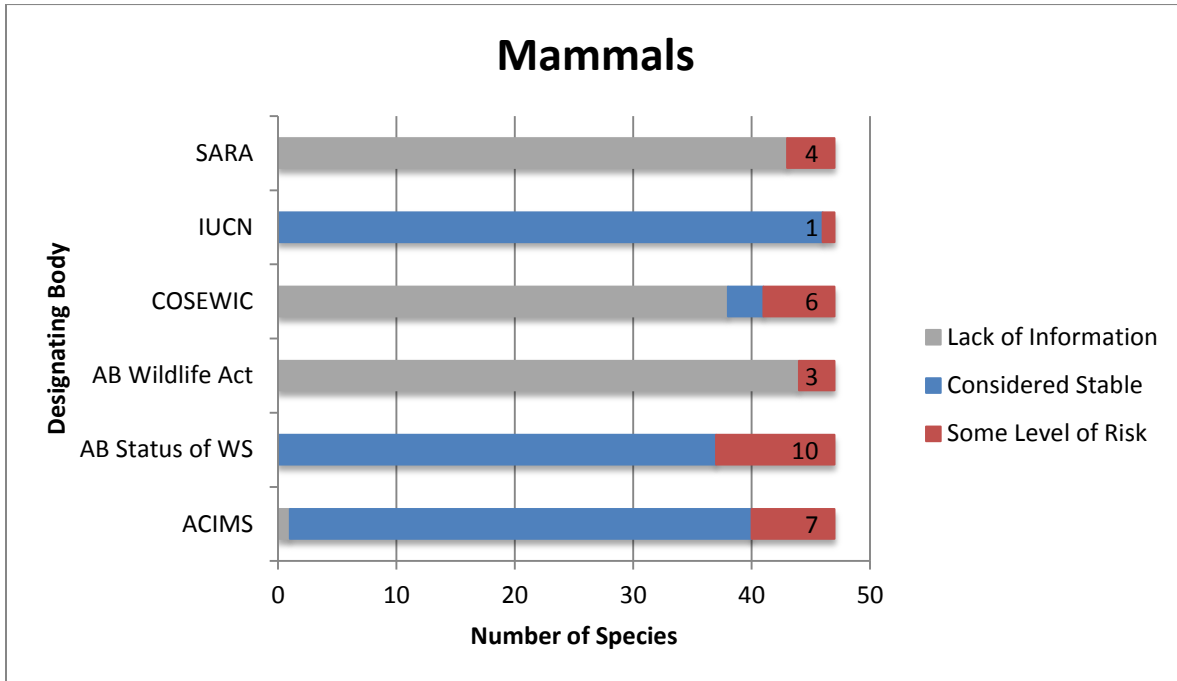


Figure 13. Number of NW Alberta Mammal species (47 mammal species total) by DMI Status Category for each designating body. Numbers at the end of each bar graph represent the number of species with a status of Some Level of Risk.

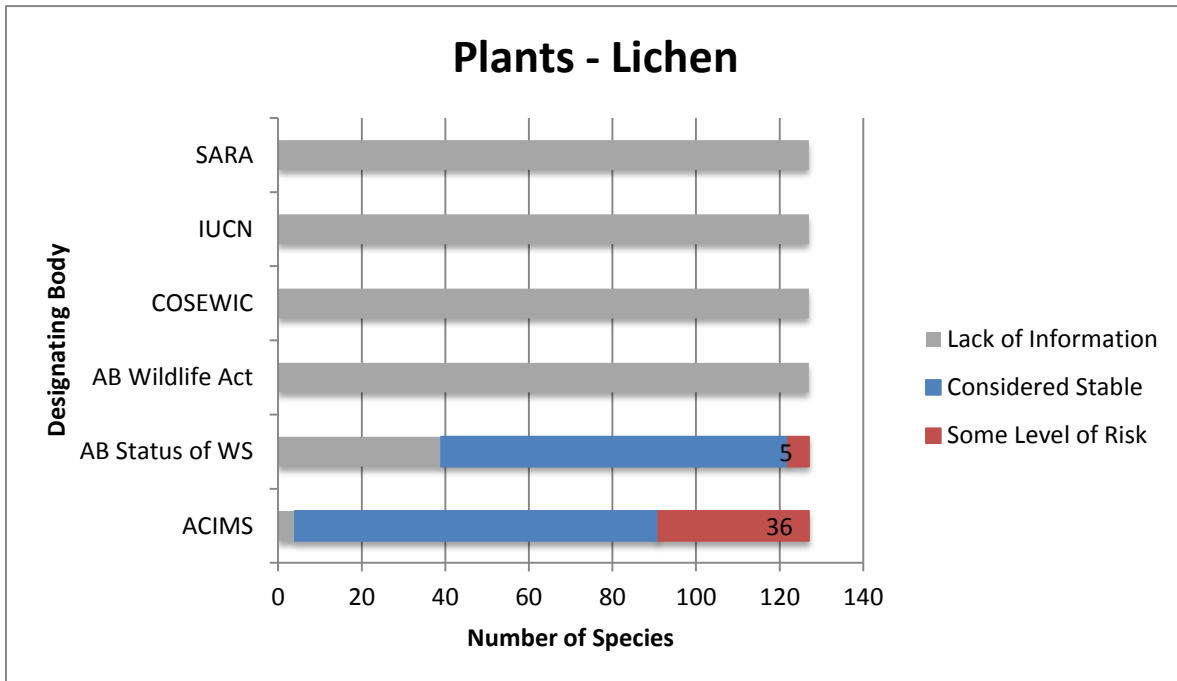


Figure 14. Number of NW Alberta Lichen species (127 lichen species total) by DMI Status Category for each designating body. Numbers at the end of each bar graph represent the number of species with a status of Some Level of Risk.



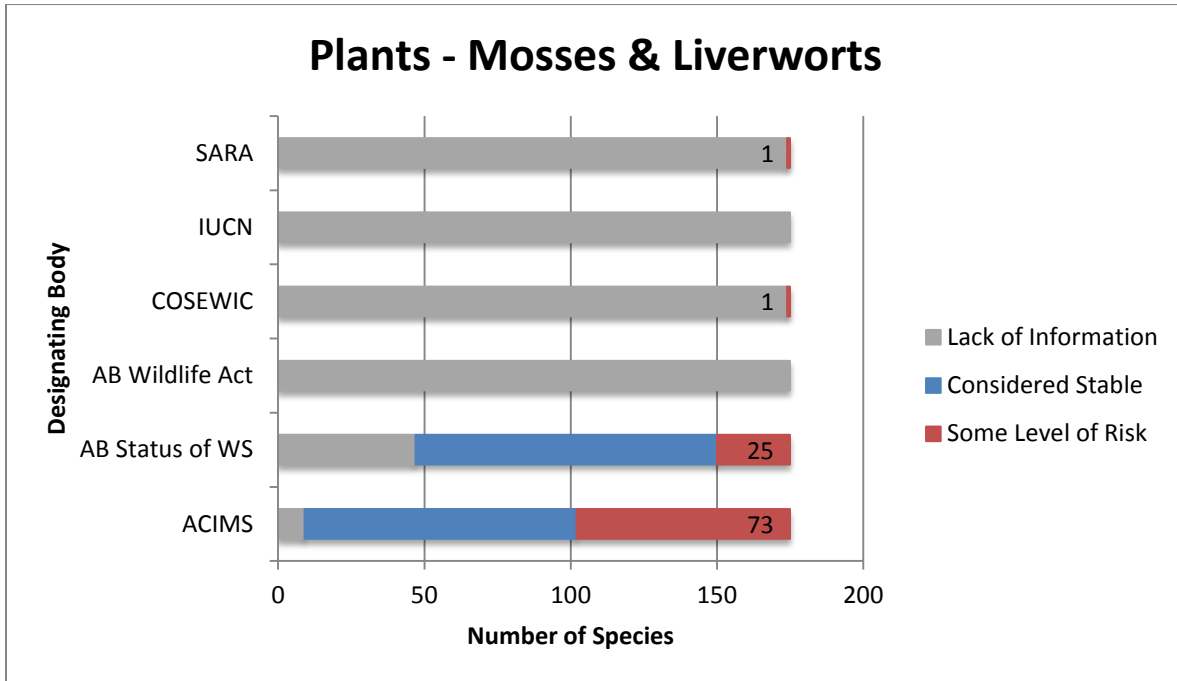


Figure 15. Number of NW Alberta Moss and Liverwort species (175 species total) by DMI Status Category for each designating body. Numbers at the end of each bar graph represent the number of species with a status of Some Level of Risk.

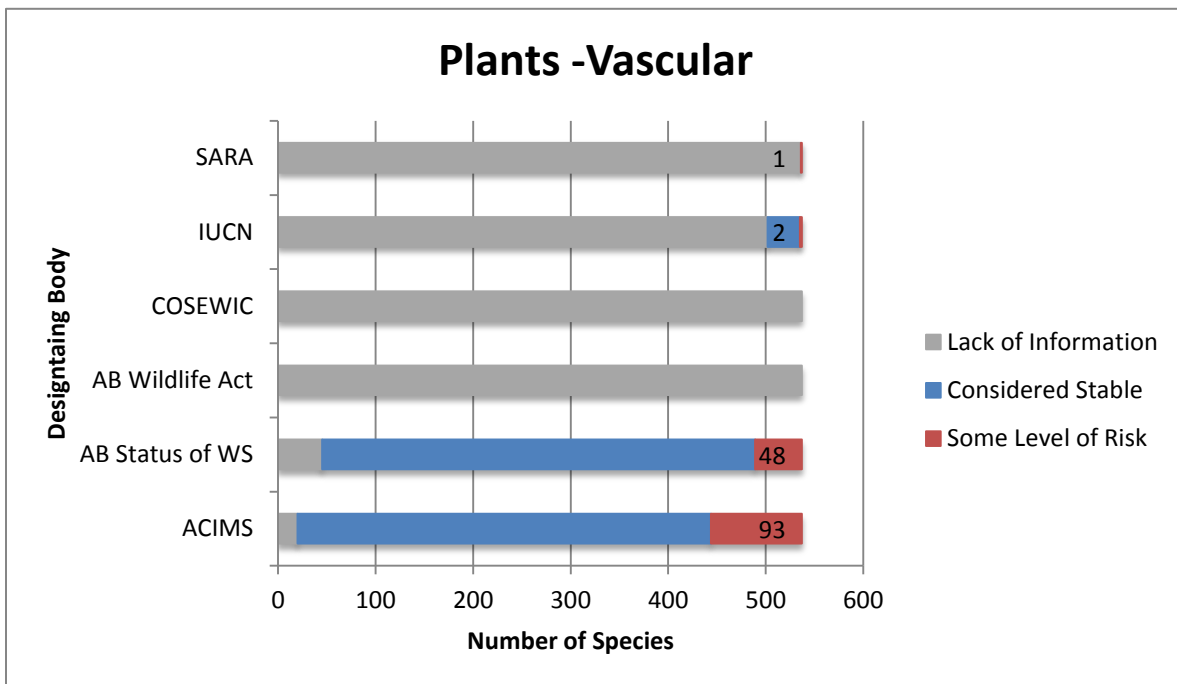


Figure 16. Number of NW Alberta Vascular Plant species (537 vascular plant species total) by DMI Status Category for each designating body. Numbers at the end of each bar graph represent the number of species with a status of Some Level of Risk.



6.0 Ecological Communities Summary

The 2014 update included an analysis of the ecological communities present within natural subregions that are represented within the DMI FMAs. The identification of these communities from ACIMS sources does not necessarily confirm their presence within the portions of the natural subregions intersecting the DMI FMA. Nonetheless, the company desires awareness of this distinct tracking list. Ecological communities in Alberta are tracked and provided an S ranking similar to other tracked ACIMS species. The two major criteria in determining ecological community rank are the total number of occurrences and the total area of the ecological community throughout its range.

Ecological communities are tracked by natural subregion. The DMI FMA includes four natural subregions including; Central Mixedwood, Dry Mixedwood, Lower Boreal Highlands, and the Upper Boreal Highlands. In addition, since the DMI FMAs straddle the white zone, the Peace River Parkland sub region was also considered in the analysis. Ecological Communities that had: 1) confirmed presence in each of the natural Subregions, and 2) S-rankings of S3 or lower were identified (Table 2). DMI Status Categories are classified for each ecological community following the approach as outlined in Figure 1. All ecological communities identified are considered as having Some Level of Risk when S3 rankings are included in the Some Level of Risk DMI category. However, when S3 ranked species are excluded from the Some Level of Risk category, only ecological communities 25 and 26 are Considered Stable (Table 2).



Table 2. Ecological communities present in the Natural Subregions relevant for DMI FMAs. DM – dry mixedwood, CM – central mixedwood, UBH – upper boreal highlands, LBH – lower boreal highlands, PrP – Peace River parkland.

Common Name	Scientific Name	Natural Subregion
1) Saskatoon, Common bearberry, Northern rice grass	<i>Amelanchier alnifolia</i> / <i>Arctostaphylos uva-ursi</i> / <i>Oryzopsis pungens</i>	DM, PrP
2) Mud sedge, pendant branch, peat moss	<i>Carex limosa</i> / <i>Sphagnum jensenii</i>	UBH
3) Northern quillwort aquatic community	<i>Isoetes echinospora aquatic community</i>	LBH
4) Cyperus-like sedge, water arum	<i>Carex pseudocyperus</i> - <i>Calla palustris</i>	DM
5) Tamarack, prairie sedge	<i>Larix laricina</i> / <i>Carex prairea</i>	DM
6) Balsam poplar, high-bush cranberry, ostrich fern	<i>Populus balsamifera</i> / <i>Viburnum opulus</i> / <i>Matteuccia struthiopteris</i>	CM
7) Aspen, thimbleberry, wild sarsaparilla	<i>Populus tremuloides</i> / <i>Rubus parviflorus</i> / <i>Aralia nudicaulis</i>	CM
8) Aspen, beaked willow, beaked hazelnut, bluejoint, ostrich fern	<i>Populus tremuloides</i> / <i>Salix bebbiana</i> - <i>Corylus cornuta</i> / <i>Calamagrostis canadensis</i> – <i>Matteuccia struthiopteris</i>	CM
9) Nuttall's salt-meadow grass, western sea-blite, salt-marsh sand spurry barren	<i>Puccinellia nuttalliana</i> – <i>Suaeda calceoliformis</i> – <i>Spergularia marina barren</i>	CM
10) Drummond's willow, small-fruited bulrush, bluejoint	<i>Salix drummondiana</i> / <i>Scirpus microcarpus</i> – <i>Calamagrostis canadensis</i>	CM
11) Slender wheat grass, needle grass species	<i>Elymus trachycaulus</i> - <i>Stipa</i> spp.	PrP
12) Slender wheat grass, awned sedge	<i>Elymus trachycaulus</i> - <i>Carex atherodes</i>	PrP
13) Western porcupine grass, green needle grass, sedges	<i>Stipa curtiseta</i> - <i>S. viridula</i> - <i>Carex</i> spp.	PrP
14) Mud sedge, scheuchzeria, peat moss	<i>Carex limosa</i> - <i>Scheuchzeria palustris</i> / <i>Sphagnum teres</i> - <i>S. subsecundum</i>	CM
15) Balsam poplar, alder-leaved buckthorn	<i>Populus balsamifera</i> / <i>Rhamnus alnifolia</i> / <i>Equisetum arvense</i>	CM
16) Low sedge, western wheat grass, slope grassland	<i>Carex stenophylla</i> - <i>Pascopyrum smithii slope grassland</i>	DM
17) June grass - western wheat grass	<i>Koeleria macrantha</i> - <i>Pascopyrum smithii</i>	PrP
18) Western wheat grass, Herriot's sagewort, pasture sagewort	<i>Pascopyrum smithii</i> - <i>Artemisia tilesii</i> - <i>Artemisia frigida</i>	DM, PrP
19) Alaska birch, common Labrador tea	<i>Betula neoalaskana</i> / <i>Ledum groenlandicum</i>	DM
20) Mud sedge, buck-bean, meadow bitter cress	<i>Carex limosa</i> - <i>Menyanthes trifoliata</i> - <i>Cardamine pratensis</i>	CM
21) Turned sedge marsh	<i>Carex retrorsa marsh</i>	CM
22) Seaside arrow-grass, graceful sedge, spring fen	<i>Triglochin maritima</i> - <i>Carex praegracilis spring fen</i>	CM
23) Giant bur-reed emergent aquatic vegetation	<i>Sparganium eurycarpum emergent aquatic vegetation</i>	DM
24) Samphire emergent marsh	<i>Salicornia rubra emergent marsh</i>	DM, CM
25) White spruce, river alder, Alaska birch, meadow horsetail, stair-step moss	<i>Picea glauca</i> / <i>Alnus incana ssp. tenuifolia</i> – <i>Betula neoalaskana</i> / <i>Equisetum pratense</i> / <i>Hylocomium splendens</i>	CM
26) Balsam poplar, river alder, red-osier dogwood, meadow horsetail	<i>Populus balsamifera</i> / <i>Alnus incana ssp. tenuifolia</i> - <i>Cornus stolonifera</i> / <i>Equisetum pratense</i>	CM



7.0 Conclusions

The 2014 DMI Species Status update followed methods set out by early editions of the project and subsequent updates. Online databases provided by each of six designating bodies were queried to determine the designated conservation status for Alberta species. The results were compiled in a list 2598 species expected to occur in northwestern Alberta, and in the DMI FMA.



8.0 Literature Cited

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