Conservation Feature Responsibility Analysis for Kootenay National Park in the Invermere Timber Supply Area

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Final Draft

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INTRODUCTION

This report represents a component of a project designed to use a conservation area planning tool (MARXAN) to identify areas with high conservation value within the East Kootenay Conservation Program (EKCP) study area, in the East Kootenay region of British Columbia.

The EKCP study area represents over 3.3 million hectares located in the Rocky Mountain Trench, in the southeast portion of British Columbia (Figure 1). The EKCP was established in 2001 by more than 25 conservation partners consisting of conservation organizations, industry and government agencies. The mandate of this program is to coordinate and facilitate habitat conservation efforts, and to set conservation goals and objectives for the EKCP area.

The broad objectives of the project are as follows:

1. provide decision support for landscape level spatial planning for sustaining biodiversity at the landscape level, including recovery of listed SAR
2. help integrate multiple objectives such as ecosystem representation, old growth management areas and species conservation objectives at the landscape level
3. help balance among competing biodiversity objectives, and between biodiversity and economic objectives
4. help determine conservation 'responsibility' among tenure holders
5. provide a systematic planning basis to support development of future monitoring priorities for biodiversity

The first year of a two year project is set in a pilot area within the EKCP, the Invermere Timber Supply Area (TSA), which is a large forest management planning unit. This report focuses on the contribution of Kootenay National Park (KNP) to protecting conservation features in KNP (Figure 2).

The results of the overall project are found in Wells (2007a). This report focuses on a critical component the project, which is understanding the contribution of existing protected areas to protecting important landscape level conservation features in the region. This is goal of Objective 4, determining the 'responsibility' which is based on the proportion, of conservation features found in a protected area, after the approach of Dunn et al (1999).

Figure 1. Location of the East Kootenay Conservation Program study area

An ecosystem representation analysis (Wells et al. 2004) provides a key foundation piece for the project, and the second objective of this report is to report on National Park responsibility for ecosystem types[1] identified in the EKCP.

[1] Ecosystem types are based on groupings of BEC site series (see Wells et al. 2004 for further details).

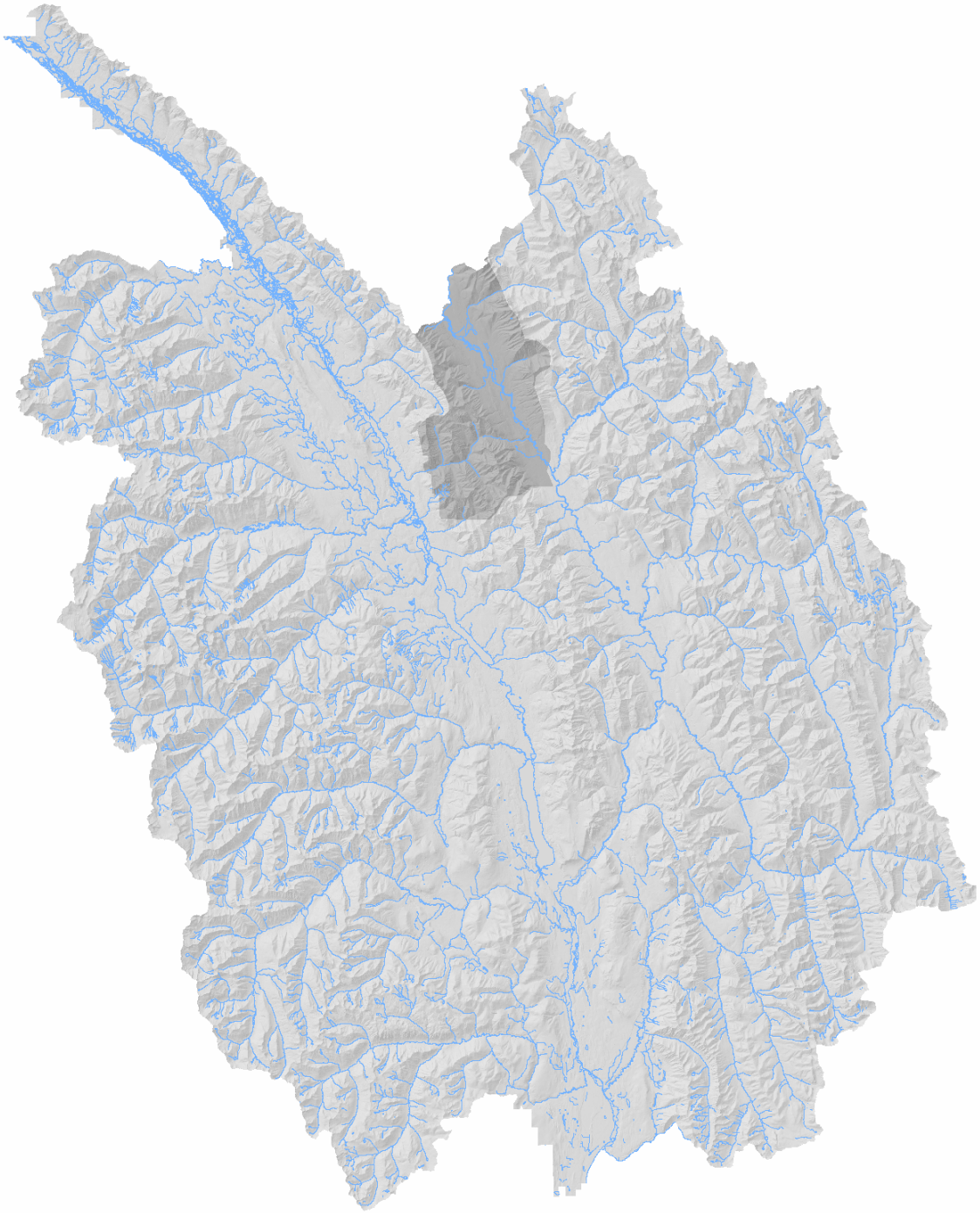

Figure 2. Invermere TSA study area. Kootenay National Park is in dark grey.

METHODS

Conservation feature data for ecosystem representation are from an ecosystem representation evaluation undertaken by Wells et al (2004). Further details and methods are found in Wells et al. (2004) and provided in metadata documentation for this project (Wells 2007b). Other conservation feature data were derived from vegetation resource inventory (VRI) data provided by BC Integrated Land Management Bureau (ILMB) and described further in Wells (2007b). Further background can be found in Wells (2005).

Data layers and responsibility analyses presented here are part of the basis for target setting for conservation area selection (Wells 2007a). The conservation area selection component of the project uses MARXAN reserve design software (Ball and Possingham 2000; Possingham et al. 2000) to achieving targets for conservation features from areas currently available for forest harvesting or from private land (Wells 2007a).

The responsibility measure, using the approach of Dunn et al. (1999), is the ratio of the proportion of the conservation feature found in the area of management concern (in this case Kootenay National Park) relative to the proportion of the total area of KNP to the larger study area (in this case, the Invermere TSA).

RESULTS

Kootenay and Yoho National Parks have a disproportionate responsibility (> 1) for six ecosystem groups found in the EKCP (Table 1). The highest responsibility is for ecosystem group 9, where Kootenay and Yoho have a combined 82% of the EKCP distribution. This group, a wet site associated with riparian areas[2], is notable in that it is very uncommon (< 4500ha) in the EKCP. Other high responsibility ecosystem groups are site series associated with higher elevation Engelmann Spruce – Subalpine Fir (ESSF) BEC types, that are generally well represented in protected areas and non-harvestable forest areas (NHLB) in the study area. Ecosystem group 3 and 7 are also found in both National Parks, and while low responsibility (< 1), they are notable because they are not well represented in the NHLB (including protected areas) in the EKCP, and therefore a conservation priority for the region.

Other habitat types were also identified as conservation features for the study (Wells 2007a), and of those, seven were found in the KNP portion of the Invermere TSA study area (Table 2; Appendix 1). Of those, KNP was found to have high responsibility for two: the previously identified ecosystem group 19, and stands rich in hardwoods (Table 2). VRI data available for KNP may under-represent some habitat features found in KNP, so these results should be considered in that context.

[2] Subhydric MS (MSdk/07), characterized by level slope position (bench) and organic soils. Dominated by open hybrid white spruce stands; understory of sedges, Sitka alder (*Alnus viridis*), black twinberry, scrub birch (*betula glandulosa*) and sphagnum (*Sphagnum* spp.).

Table 1. Contribution of Kootenay and Yoho National Parks to ecosystem representation in the East Kootenay Conservation Program (% of EKCP ecosystem types found within KNP). Highlighted ecosystem groups have a responsibility > 1.

Ecosystem Group	Total EKCP (ha)	NHLB (%)	Yoho (ha)	Kootenay (ha)	Total Park (ha)	% EKCP	Responsibility
1	73,765	14.8%	0	19	19	0.0%	**0.0**
2	949	24.5%	0	1	1	0.1%	**0.0**
3	237,685	23.3%	1,661	243	1,904	0.8%	**0.1**
4	45,691	23.2%	0	0	0	0.0%	**0.0**
5	370	36.9%	0	0	0	0.0%	**0.0**
6	92,710	32.3%	0	0	0	0.0%	**0.0**
7	315,806	32.8%	6,553	8,839	15,392	4.9%	**0.6**
8	4,402	16.6%	0	0	0	0.0%	**0.0**
9	32	29.7%	0	0	0	0.0%	**0.0**
10	6,702	39.8%	0	0	0	0.0%	**0.0**
11	98,077	44.9%	3,003	3,401	6,404	6.5%	**0.8**
12	10,851	30.7%	0	3	3	0.0%	**0.0**
13	4,667	40.9%	0	0	0	0.0%	**0.0**
14	1,645	29.2%	0	0	0	0.0%	**0.0**
15	821	35.2%	0	0	0	0.0%	**0.0**
16	368	35.4%	0	0	0	0.0%	**0.0**
17	6,526	57.3%	0	0	0	0.0%	**0.0**
18	8,891	53.7%	76	31	107	1.2%	**0.1**
19	4,462	91.1%	1,764	1,899	3,663	82.1%	**10.1**
20	68,812	57.9%	3,425	2,367	5,791	8.4%	**1.0**
21	301,937	66.0%	1,883	3,099	4,982	1.6%	**0.2**
22	249,290	66.1%	11,619	17,326	28,945	11.6%	**1.4**
23	16,903	74.5%	1,359	2,966	4,325	25.6%	**3.1**
24	1,750	75.7%	0	0	0	0.0%	**0.0**
25	12,009	79.9%	0	0	0	0.0%	**0.0**
26	21,548	38.3%	0	0	0	0.0%	**0.0**
27	21,476	39.9%	0	0	0	0.0%	**0.0**
28	49,698	59.5%	0	0	0	0.0%	**0.0**
29	2,444	61.7%	0	0	0	0.0%	**0.0**
30	53	65.4%	0	0	0	0.0%	**0.0**
31	14,242	87.2%	652	777	1,429	10.0%	**1.2**
32	13,067	96.8%	231	450	681	5.2%	**0.6**
33	50,561	92.7%	39	139	177	0.4%	**0.0**
34	14,387	82.5%	709	1,051	1,760	12.2%	**1.5**
35	4,069	93.7%	161	392	552	13.6%	**1.7**
48	14,693	30.0%	0	0	0	0.0%	**0.0**

Table 2. Kootenay National Park responsibility for conservation features in the Invermere TSA (only responsibility values > 0 shown).

Feature Name	Area (ha) TSA	KNC	% KNC	Responsibility
Ecosystem Group 19	2,463	1,466	59.5%	**16.5**
Intact Forest	427,828	15,805	3.7%	**1.0**
'Good' OGMA	51,955	374	0.7%	**0.2**
Stands with Veterans	21,731	22	0.1%	**0.0**
Stands with Hardoods (>25%)	22,618	1,579	7.0%	**1.9**
Wetlands	13,851	185	1.3%	**0.4**
Ungulate Winter Range	20,992	181	0.9%	**0.2**

DISCUSSION

Kootenay and Yoho National Parks have a high responsibility for six ecosystem groups found in the EKCP, including most (>80%) of an uncommon riparian associated type. Given this responsibility, the BEC site series associated with these groups could become a focus of management for the parks.

Overall, KNP had high responsibility for two conservation features in the study area (ecosystem group 19, hardwoods). This low number may be a reflection of the VRI inventory data used for KNP. An objective for year 2 of the project will to be to work with KNP staff to identify available data that may be integrated into the project.

Results of the overall project are found in Wells (2007a). The broad objectives of that project are to identify key areas across a range of jurisdictions and tenures to meet targets for conservation features in the study area. Key jurisdictions (federal and provincial governments, industry, private land interests) have been engaged in this project to ensure the results will have relevancy and buy-in.

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REFERENCES

Bunnell F.L., B.G. Dunsworth, D.J. Huggard, and L.L. Kremsater. 2003. Learning to sustain biological diversity on Weyerhaeuser's coastal tenure. Weyerhaeuser, Nanaimo, BC. URL: http://cacr.forestry.ubc.ca/forest_strategy/am/framework.htm

Dunn, E.H., Hussell, D.J.T., and Welsh, D.A. 1999. Priority-setting tool applied to Canada's landbirds based on concern and responsibility for species. Conserv. Biol. 13:1404–1415.

Jennings, S., R. Nussbaum, N. Judd and T. Evans. 2003. The High Conservation Value Forest Toolkit. Edition 1. Proforest, Oxford, UK. www.proforest.net

Ball, I. R. and H. P. Possingham, (2000) MARXAN (V1.8.2): Marine Reserve Design Using Spatially Explicit Annealing, a Manual

Possingham, H. P., I. R. Ball and S. Andelman (2000) Mathematical methods for identifying representative reserve networks. In: S. Ferson and M. Burgman (eds) Quantitative methods for conservation biology. Springer-Verlag, New York, pp. 291-305.

Stuart-Smith, K. and R.W. Wells. 2006. High Conservation Value Forests in Tembec's Canal Flats Operating Area, South-East British Columbia. Tembec Industries Inc. Cranbrook, B.C.

Tembec Inc. 2005. Sustainable Forest Management Plan. Tembec Industries, BC Division. Cranbrook, B.C.

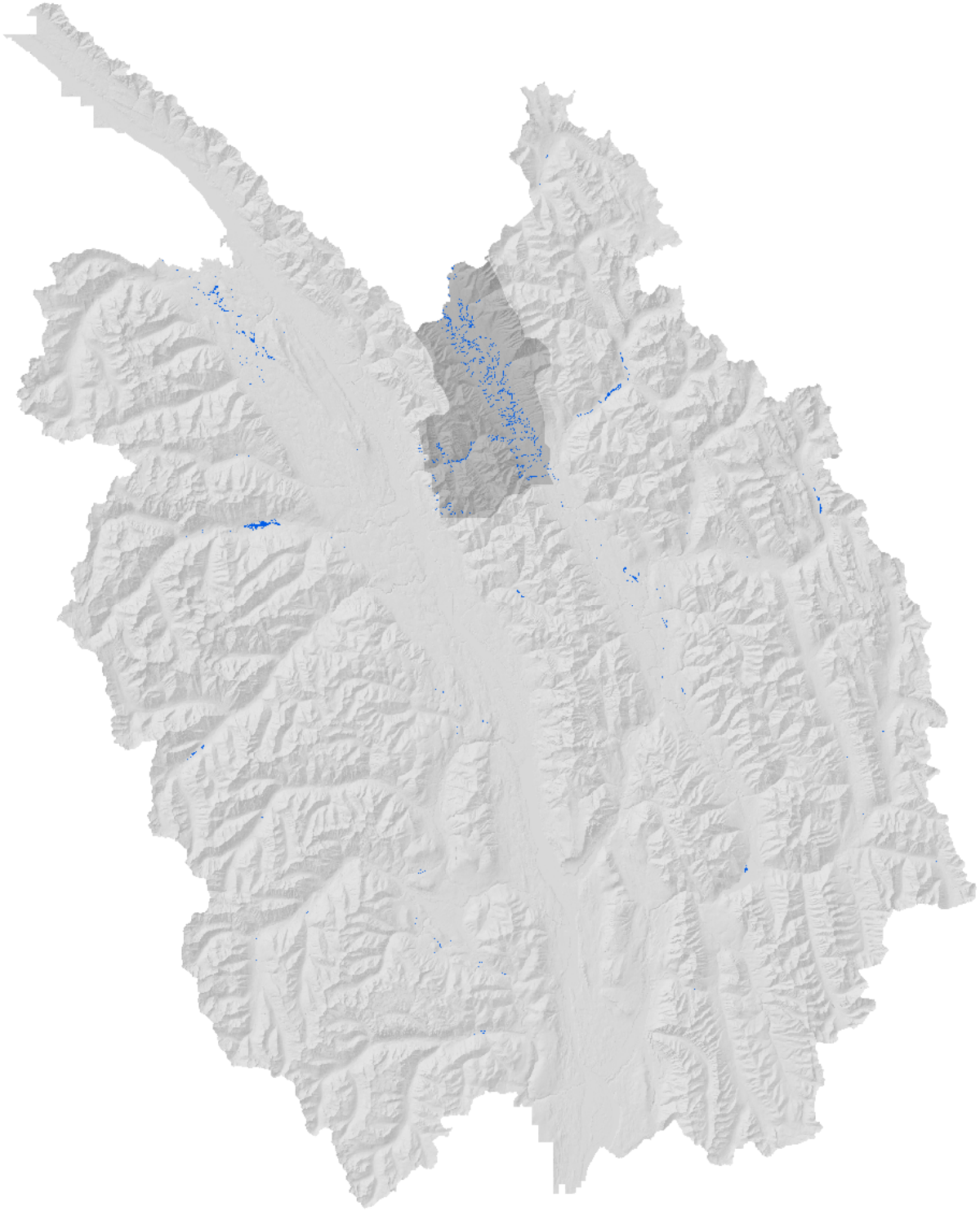
Wells, R.W. 2007. Identifying priority areas for conservation features in the Invermere TSA. Centre for Applied Conservation Research Forest Science Program report. Vancouver, B.C.

Wells, R.W. 2005. Candidate High Conservation Value Forest (HCVF) Assessment in the Invermere Timber Supply Area (HCV 1-3). Forest Investment Account Report prepared for Tembec Industries Inc. Cranbrook, B.C.

Wells, R.W., D. Haag, T. Braumandl, G. Bradfield and A. Moy. 2004a. Ecological representation in the East Kootenay Conservation Program Study Area. Forest Investment Account Report. Centre for Applied Conservation Research. Vancouver, B.C.
URL: http://www.forestbiodiversityinbc.ca/uploadedfiles/EKCPEcosystemRepresention2004Rev2.pdf

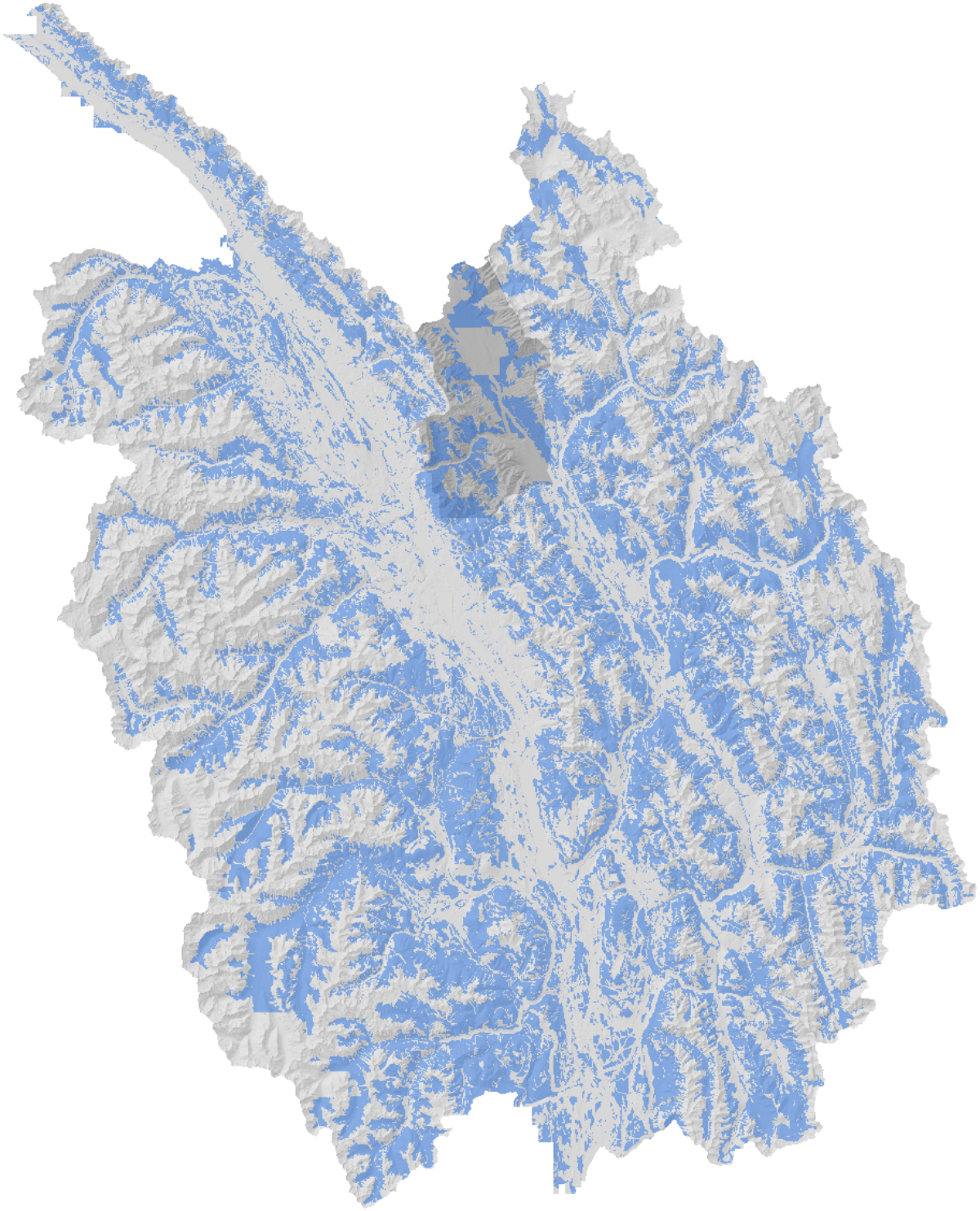
Appendix 1: Distribution of conservation features in the Invermere TSA (Kootenay National Park in dark grey):

Ecosystem Group 19

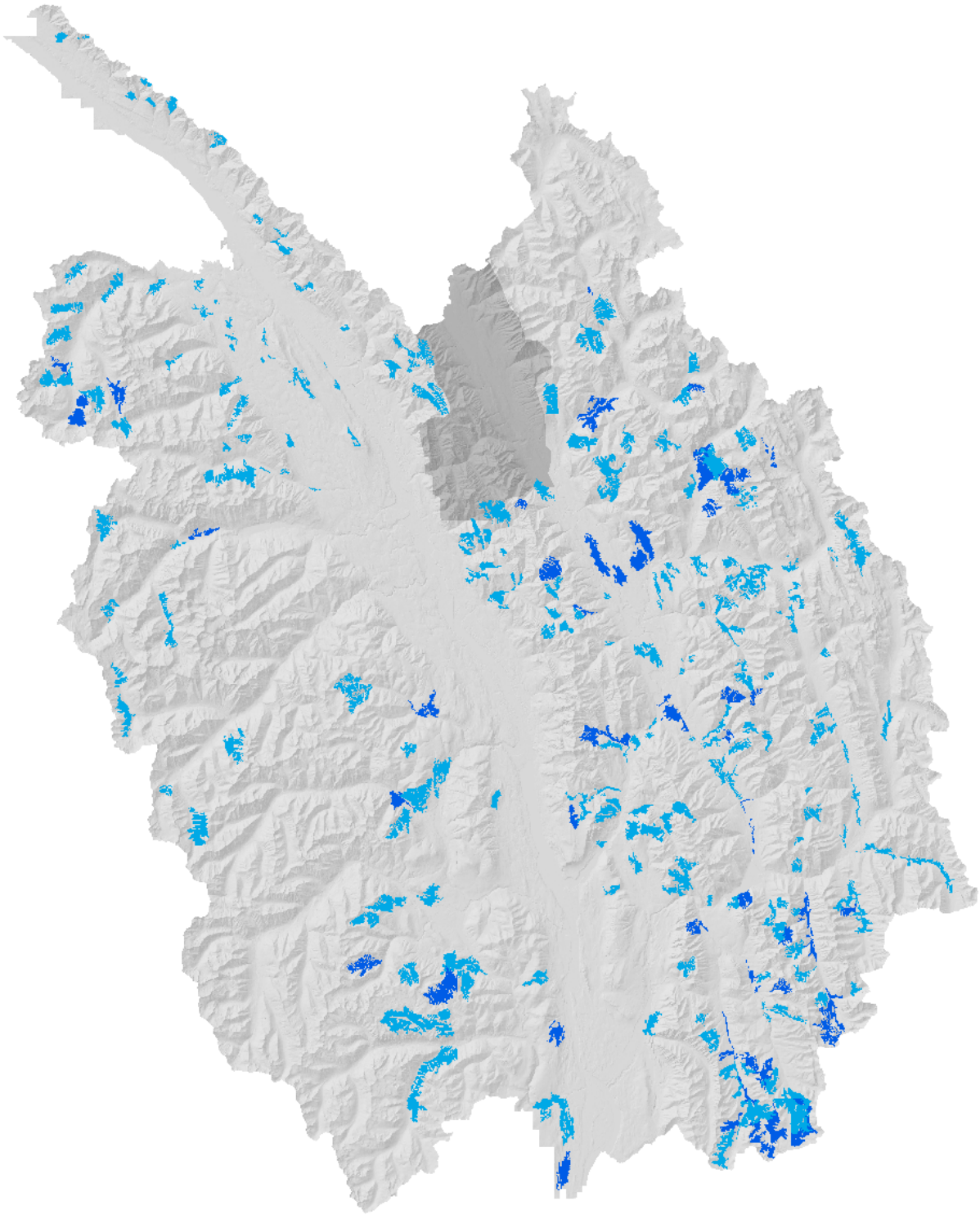


Appendix 1, cont.: Distribution of conservation features in the Invermere TSA (Kootenay National Park in dark grey):

Intact Forest

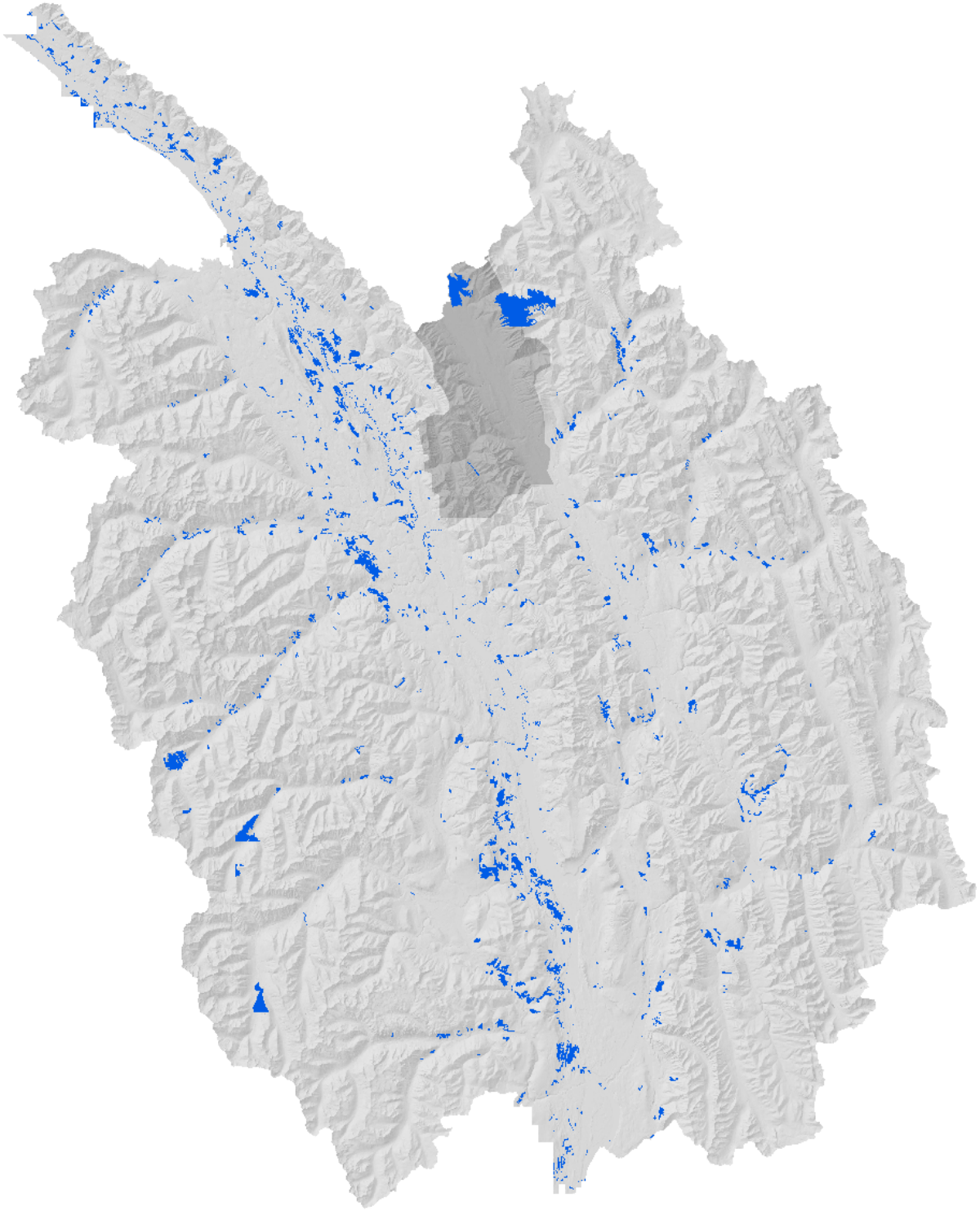


Appendix 1, cont.: Distribution of conservation features in the Invermere TSA (Kootenay National Park in dark grey): Potential Old Growth Management Areas (OGMA). Dark blue = 'excellent" rank'; light blue = 'good' rank.



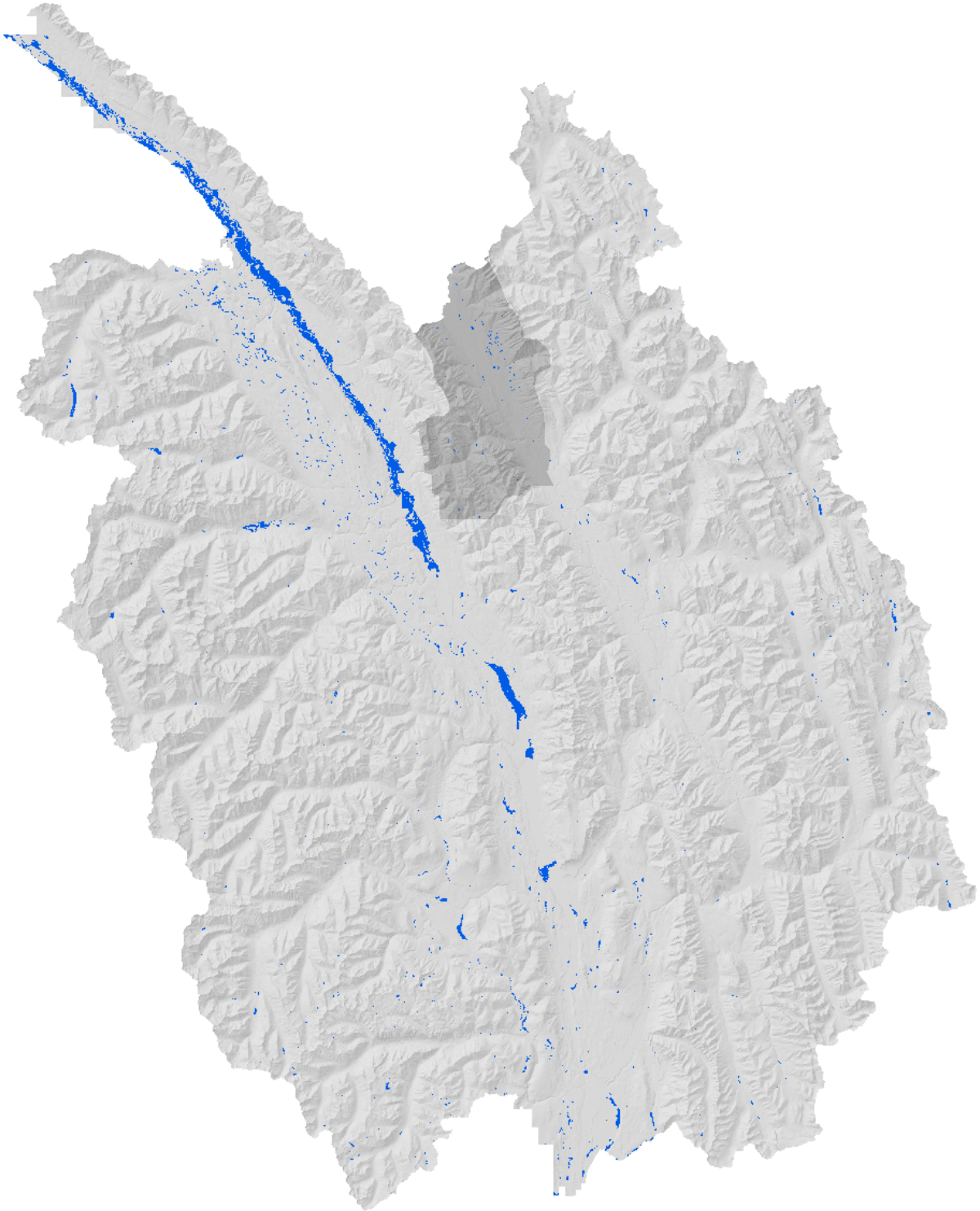
Appendix 1, cont.: Distribution of conservation features in the Invermere TSA (Kootenay National Park in dark grey):

Stands with hardwoods (>25%)



Appendix 1, cont.: Distribution of conservation features in the Invermere TSA (Kootenay National Park in dark grey):

Wetlands



Appendix 1, cont.: Distribution of conservation features in the Invermere TSA (Kootenay National Park in dark grey):

Ungulate Winter Range