
Quality Assurance Guidelines: Wildlife Habitat Rating (Draft)

Prepared by
Ministry of Sustainable Resource Management
Terrestrial Information Branch
for the
Resource Information Standards Committee

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Preface

The Government of British Columbia provides funding for the work of the Resources Information Standards Committee (RISC), including the preparation of this document. To support the effective, timely and integrated use of land and resource information for planning and decision-making, RISC develops and delivers focussed, cost-effective, common provincial standards and procedures for information collection, management and analysis. Representatives on the Committee and its Task Forces are drawn from the ministries and agencies of the Canadian and British Columbia governments, as well as academic, industry and First Nations stakeholders.

RISC evolved from the Resources Inventory Committee (RIC), which received funding from the Canada-British Columbia Partnership Agreement on Forest Resource Development (FRDA II), the Corporate Resource Inventory Initiative (CRII), and Forest Renewal BC (FRBC). RIC addressed concerns of the 1991 Forest Resources Commission.

For further information about RISC, please access the RISC website at:

<http://srmwww.gov.bc.ca/risc/>.

Acknowledgements

The *Quality Assurance Guidelines – Wildlife Habitat Ratings (WHR)* was prepared by Lynne Bonner and Debbie Webb of the Ministry of Sustainable Resource Management. Helpful suggestions and reviews were provided by Ted Lea and Calvin Tolkamp of the Ministry of Sustainable Resource. Thanks to Chris Burd for his editorial expertise.

Abbreviations

BGC	biogeoclimatic
CRII	Corporate Resource Inventory Initiative
DC	data capture
DDC	digital data capture
DTEIF	Describing Terrestrial Ecosystems in the Field
FRBC	Forest Renewal BC
FRDA II	Canada-British Columbia Partnership Agreement on Forest Resource Development
FTP	file transfer protocol
GIS	geographic information system
GPS	geographic positioning system
MELP	Ministry of Environment, Lands and Parks
MOE	Ministry of Environment
MOF	Ministry of Forests
MSRM	Ministry of Sustainable Resource Management
PEM	predictive ecosystem mapping
QA	quality assurance
RIC	Resources Inventory Committee
RISC	Resources Information Standards Committee
TEM	terrestrial ecosystem mapping
TIB	Terrestrial Information Branch
WHA	Wildlife Habitat Assessment
WHR	Wildlife Habitat Rating
WI	Wildlife Inventory

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1. Introduction

Wildlife Habitat Ratings (WHR) are the values assigned to ecosystems for their ability to support a species for a particular life requisite and season of the year. The wildlife habitat capability and suitability ratings are applied to each unique ecosystem in an ecosystem mapping project. In most cases, these are either Terrestrial Ecosystem Mapping (TEM) or Predictive Ecosystem Mapping (PEM) projects at a 1:20,000 or 1:50,000 map scale, although for certain types of projects, map scales of greater than 1:20,000 may be used. WHR projects are undertaken by qualified wildlife biologists following the provincial standards described below.

1.1. Purpose

The purpose of these guidelines is to provide guidance and direction to those engaged in the quality assurance (QA) of WHR projects. The quality assurance of WHR projects includes:

- overseeing the project initiation;
- QA of preliminary species-habitat models;
- QA of field sampling plan;
- QA of field work;
- QA of final species-habitat models;
- QA of final wildlife report;
- QA of the digital data (project wildlife habitat ratings table) to ensure it meets the standards required to be entered into the provincial WHR warehouse;
- submission of final project deliverables to the provincial government;
- submission of final QA report

The principal users of these guidelines will be wildlife biologists who have been contracted to provide quality assurance of WHR projects.

1.2. Scope

The QA procedures in this document are intended to assure the correct application of the following standards and tools:

1. *British Columbia Wildlife Habitat Rating Standards* (RIC 1999), Version 2.0 (hereafter referred to as WHR Standards). These guidelines are based on the provincial standard for rating wildlife habitat capability and suitability. The WHR Standards not only define the standard criteria for rating wildlife habitat but also describe the overall procedures required to manage and undertake a wildlife habitat capability and suitability ratings project. The quality assurance guidelines outlined in this document address the minimum requirements in the WHR Standards. However, in some cases, quality assurance may need to go beyond the minimum when the WHR project objectives require more detailed ratings and/or mapping (for example, a 1:5000 map scale project for a species at risk).

The WHR Standards can be accessed on-line at:

<http://srmwww.gov.bc.ca/wildlife/whr/index.html> or through the Queen's Printer at <http://www.bcsolutions.gov.bc.ca/qp/>.

2. *WHR Data Submission Standards*. The technical standards for digital data capture are also dealt with separately in Section 3. However, it is integral to the WHR standards, as both standards

ensure that wildlife habitat capability and suitability ratings are developed and captured in a consistent manner and a format that will allow the data to be stored and accessed through the provincial data warehouse.

The *WHR Data Submission Standards* can be accessed on-line at:

<http://srmwww.gov.bc.ca/wildlife/whr/index.html> or through the Queen's Printer at <http://www.bcsolutions.gov.bc.ca/qp/>.

3. Ratings Table and Mapping Tools. The Wildlife and Wildlife Habitat Inventory Section has developed a ratings table tool and a mapping tool. They are available on the Section web site at <http://srmwww.gov.bc.ca/wildlife/whr/index.html>.

The tools enable the user to generate ratings tables and apply ratings to an ecosystem map. The mapping tool is particularly useful for biologists to review a map of their draft ratings.

Users of this mapping tool are cautioned that there are no standards for mapping wildlife-habitat ratings data. There are several ways the ratings data can be presented on a map and it is up to the individual user to understand the implications of each technique for applying ratings and to select the appropriate mapping approach for their intended purpose.

4. *Quality Assurance Guidelines for Describing Terrestrial Ecosystems in the Field* (RISC, 2003) (DTEIF QA document). Because the Wildlife Habitat Assessment form, FS 882 (5), is part of the field manual *Describing Terrestrial Ecosystems in the Field* (MELP/MOF, 1998), the QA requirements for collecting WHR plot data during field sampling are provided in a separate QA document. The QA contractor is responsible for ensuring that the appropriate checklists and sign-off forms from the DTEIF QA document are included in the QA of the field work stage of WHR projects (see Table 1 and Table 2).

2. Quality Assurance Procedures

The following procedures address the minimum requirements outlined in the WHR Standards. The steps that quality assurance needs to address are described. The appropriate checklist is indicated by a checkbox (☑) followed by the number of the checklist and the relevant questions (e.g. 2-1 to 2-6 indicates Checklist 2, questions 1 through 6).

The checklists in Section 3 are to assist the quality assurance contractors and should be submitted as part of the QA Report at the end of the project. Table 1 lists all the checklists required to provide quality assurance of the three stages (Pre-Field, Field and Post-Field) of a WHR project. Note that there is an additional form required for Field QA of the Wildlife Habitat Assessment form (FS 882(5)). The QA contractor must obtain DTEIF Checklist 6 from the *Quality Assurance Guidelines for Describing Terrestrial Ecosystems in the Field* (RISC, 2003).

The Preliminary Species-Habitat Model and the Field Sampling Plan (Checklists 1, 2 and 3) must be submitted and signed off before fieldwork begins.

Table 1. Checklists required for WHR QA

Checklist	Stage	Step
WHR Checklist 1	Pre-Field	Project Coordination
WHR Checklist 2		Preliminary Species-Habitat Model
WHR Checklist 3		Field Sampling Plan
WHR Checklist 4	Field	Field Sampling
DTEIF Checklist __		Wildlife Habitat Assessment FS 882(5)
WHR Checklist 5	Post-Field	Data Capture
WHR Checklist 6		Final Species-Habitat Models
WHR Checklist 7		Wildlife Habitat Maps & Report
WHR Checklist 8	Summary Checklist	Final Products

Section 4 contains sign-off forms (Table 2). One sign-off form for each stage of the WHR project must be signed by the QA contractor before the project wildlife contractor can be paid for work on that stage. Note that WHR Sign-Off Form 1 is required prior to the initiation of field work. In addition, DTEIF Sign-off Form 1 is required (RISC, 2003).

Table 2. Sign-off Forms and Checklists required for WHR QA.

Sign-Off Forms	Stage	Steps	Checklists
WHR Sign-off Form 1	Pre-Field QA	Project Coordination, Preliminary Species-Habitat Models, Field Sampling Plan	WHR 1, 2, 3
WHR Sign-off Form 2 DTEIF Sign-off Form 1	Field QA	Field Sampling	WHR 4 DTEIF 6
WHR Sign-off Form 3	Post-Field	Data Entry, Final Species-Habitat Models, Final Wildlife Report	WHR 5, 6, 7

WHR Sign-off Form 4	Project QA	Summary Checklist	WHR 8
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2.1. Quality Assurance Deliverables

WHR Quality Assurance data is to be submitted to the Province at the end of a WHR project. All QA deliverables will be zipped into one file. This one file will contain one submission file, one metadata file, one WHR project contract, a project evaluation, one or more completed QA checklists, and one or more completed QA sign-off forms.

Location

WHR QA deliverables are to be delivered to the Ministry of Sustainable Resource Management ftp site at <ftp://ftp.env.gov.bc.ca/pub/incoming/whr>. Anonymous login will be used by the contractor to access the ftp site.

Naming convention for QA deliverables

All file names must be in lower case. The QA deliverables are comprised of one zip file which contains several files.

Zip file

All QA data for a WHR project must be zipped into one zip file. This file must be named whr_BAPID_qa.zip

Where

whr_ is a 3-letter code standing for Wildlife Habitat Ratings, followed by an underscore

<BAPID> is a 4-digit code that uniquely identifies the WHR project. The 4-digit code is given to the WHR practitioner before the WHR deliverables are delivered.

_qa is an underscore followed by 'qa' to indicate the file contains QA data.

.zip is a period and a 3-letter extension to indicate the file is a zipped file.

Zipped files

The files within the zip file comprise the QA deliverables. Included in these files is one metadata file, one submission file, one WHR project contract, a project evaluation, one or more QA checklists, and one or more QA sign-off forms. The submission and metadata files must be named submission.csv and metadata.csv respectively and contain the information listed in Table 3 and Table 4 respectively.

Table 3. Fields and contents required in submission.csv file.

Field Name	Contents
BAPID	A 4-digit code that uniquely identifies the WHR project
BusinessArea	whr
SubmittersName	Name of person submitting the QA deliverables to the ftp site.

Field Name	Contents
SubmittersPhone	Phone number of person submitting the QA deliverables to the ftp site.

Table 4. Fields and contents required in metadata.csv file.

Field Name	Contents
Org_Name	The public or private-sector organization responsible for QA of the WHR project.
Name	The name of the individual person responsible for QA of the WHR project.

The project evaluation should include the QA contractor’s comments on any concerns or difficulties arising during the project, as well as things that worked well and any suggestions that might be used for improving future WHR projects.

Interim quality assurance reports are not generally required. However, if there are concerns that are not addressed, then written documentation should be provided to both the contract monitor and to the provincial government in a timely manner.

2.2. Contract

The quality assurance contractor should use the actual contract for the particular WHR contract that is being assessed as the guiding document for the project. The project contract will be provided by the WHR project contract monitor.

2.3. Project Plan

A project plan is the first step in preparing for a wildlife habitat ratings project. The elements of a WHR project plan are described in the WHR Standards. In most cases, the Request for Proposal provides the project plan. However, at the project initiation meeting, the wildlife biologist should have an opportunity to review the WHR requirements with the contract monitor to ensure that the WHR project plan elements are appropriate and detailed enough (e.g., map scale, survey intensity, species selected, products required, etc.).

2.4. Project Coordination

It is important for both the ecosystem mappers and the wildlife biologist to work together as a team from the beginning of the project. When wildlife interpretations are part of the ecosystem mapping project, the wildlife component should not be thought of as an “add-on” to be considered once the ecosystem map is completed.

Note: In some cases, however, wildlife habitat ratings actually will be an “add-on” – when the original ecosystem mapping project did not include wildlife interpretations, or it did not include a species that has since become important for management. Quality assurance for these kinds of projects may have some different considerations and these are addressed in Appendix II.

Project Objectives: Both ecosystem mappers and wildlife biologists should be clear on the objectives for wildlife and how the information will be used by the client. This may influence the kind of ecosystem and wildlife data that will be collected and how the ratings will be developed.

1-1

Wildlife species and habitat uses: See the WHR Standards section 4.1.5 for guidance on the type and number of species to include in a project. ☑ 1-2

Ecosystem map attributes: It is particularly important to identify what ecosystem attributes are required for the wildlife habitat ratings early on in the project. These attributes must be described by the terrain specialist and/or the ecologist when collecting field data and also must be included in the ecosystem database. ☑ 1-3

Air photo pre-typing: Wildlife biologists should have input to the development of ecosystem polygons during the pre-typing process for TEM, in order to ensure important wildlife habitat features, such as avalanche slopes, escape terrain, etc., are identified. ☑ 1-4

Maps and reports required: The type of products required as the final deliverables will determine what data will be collected and how the ratings will be assigned (for example, which season and life requisites will be rated for each species). ☑ 1-5

2.5. Preliminary Species-Habitat Models

The species-habitat Model includes a species account (with ratings assumptions) and a ratings table. The preliminary species-habitat model must be completed prior to field work in order to set the sampling framework. Thorough quality assurance at this stage will facilitate data collection and subsequent development and review of the final WHR products.

Preliminary Species Accounts: the format and content of a species account is described in the WHR Standards, Section 4.2. It should not be a treatise on the biology of the species, but a description of the species-habitat relationships with emphasis on the species use of the habitats in the project area, as well as the particular ecosystems found in the project area. ☑ 2-2

A species account is required for each of the project species. An existing species account may be used, but must be modified to address habitat requirements specific to the project area. Existing species accounts can be found in the WHR data warehouse at:

<http://srmwww.gov.bc.ca/rib/wis/tem/smmmap.htm> ☑ 2-1 to 2-6

Only those seasons and life requisites that are to be rated should be described in the Habitat Use section. Thus, the habitat uses described in the species account should match the column headings for the species ratings in the ratings table (see Figure 1 for an illustration of this). ☑ 2-7

The Habitat Use and Ecosystem Attributes section should describe the ecosystem attributes that will be included in the ecosystem database for the project and should indicate how these attributes are important to the species. ☑ 2-8

Preliminary Ratings Assumptions: This is the part of the species account that describes how the ratings will be applied to the ecosystems of the project area, based on the information provided in the Habitat Use and Ecosystem Attributes section. It is the written documentation and rationale behind the actual ratings values in the ratings table and should be very detailed. The preliminary ratings assumptions set the framework for field sampling by identifying where the knowledge gaps are. The WHR field sampling plan then should be designed to fill these information gaps. ☑ 2-9 to 2-12

Preliminary Ratings Table: The ratings table values should reflect the species-habitat relationships described in the species accounts. Each column heading in the ratings table (species-season-life requisite) should have a corresponding description in the species accounts (see Figure 1).

The working legend developed by the ecosystem mappers, will provide the first level of information for developing the preliminary ratings table. The wildlife biologist needs to obtain a list of the unique ecosystems expected in the project area in order to create the preliminary ratings table. The project ecologist should be able to provide this from the ecosystem working legend.

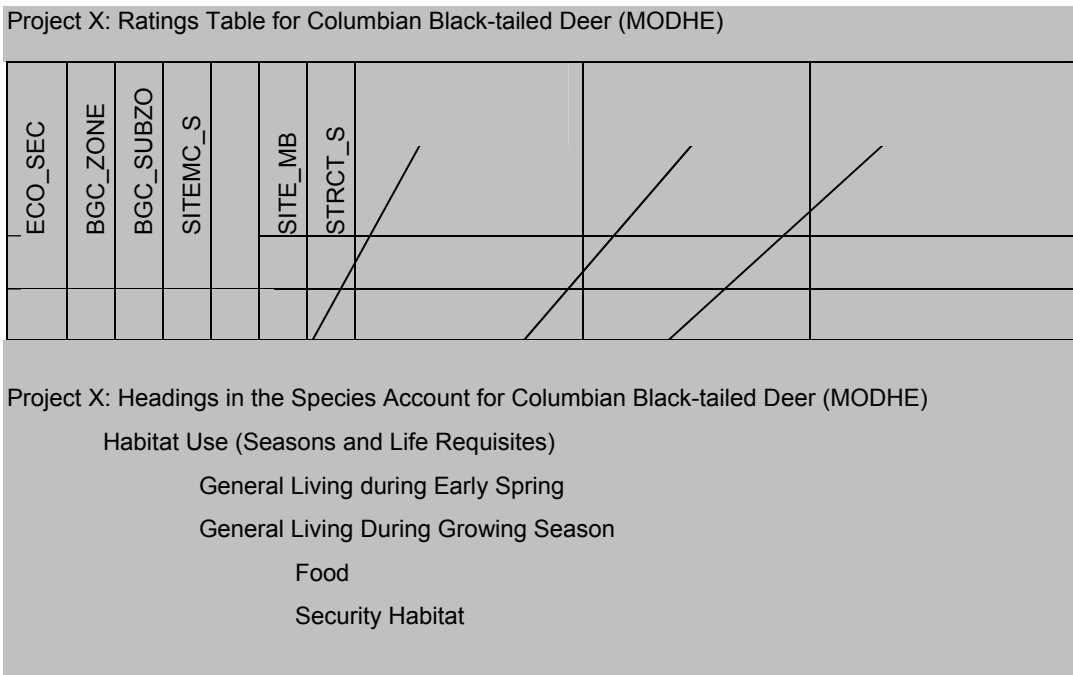
The ratings values should correspond to the descriptions in the ratings assumptions and vice versa. Where discrepancies exist, the project biologist is responsible for addressing the source of the error. For example, the ecosystems that were identified in the ratings assumptions as having high value should show up as with a high rating in the ratings table.

Some ecosystems may have been rated low because the habitats were not described adequately in the species account. 2-13

If the habitat requirements are not well described due to lack of knowledge on the contractor's part, the project biologist should be referred to a local species/habitat expert for more details.

If the habitat requirements are poorly described because of the lack of a provincial knowledge of the species-habitat relationships, then consideration should be given to either simplifying the ratings (by reducing them to a two-class rating scheme or by rating only one habitat use) or omitting the particular species or season-life requisite from the project species list. 2-14 to 2-18

Figure 1. Correspondence between the Species Account descriptions of habitat uses being rated and the headings in the Ratings Table for an example Project X.



2.6. Field Sampling Plan

Field Sampling Plan: The project sampling plan is often developed by ecosystem mappers whose sampling objectives are ecological classification rather than the identification of wildlife habitats. Therefore, the wildlife biologists must be involved in developing the field sampling plan

to ensure it includes specific wildlife habitats that are either particularly important for the project species or for which the species-habitat relationships are not clear (see Section 4.3.1 of the WHR Standards). 3-1 to 3-3

2.7. Field Sampling

Quality assurance is required in the first day or two of the field work to ensure data-collection procedures are meeting the minimum requirements outlined in the WHR Standards. This is particularly important with less-experienced contractors (i.e., contractors with less than 2 years of experience in assigning wildlife habitat ratings in the field).

Field Data collection: Plot data must be recorded on the Wildlife Habitat Assessment (WHA) form FS 882 (5) which is in Chapter 5 of *Describing Terrestrial Ecosystems in the Field (DTEIF)*. Quality assurance of WHR project field data collection is therefore part of the DTEIF QA document. The QA contractor is responsible for ensuring that the appropriate DTEIF checklists and sign-off forms are used (Table 1 and 2).

There are three types of ecosystem field plots: full plots, ground inspection plots and visual inspection plots. The standard for filling out the WHA form is:

- Full plots – complete all portions of the WHA form;
- Ground inspection plots – omit the “plot-in-context” assessment ;
- Visual inspections – complete the “plot type” assessment for project-species for which the ecosystem is of relatively high value.

4-1 to 4-2

Field Sampling Plan: The wildlife biologist should follow the sampling plan, but the field sampling needs to be flexible enough to allow for additional sampling where the field work has shown the need for more information on a particular species’ habitat. 4-3

Collaborating with Ecosystem Mappers: The WHA form is based on ecosystem attributes described in the Site (FS 882(1)), Soils (FS 882 (2)) and Vegetation (FS 882 (3)) forms in DTEIF. It is important that the wildlife biologist work in partnership with the ecosystem mappers to identify and describe the ecosystem features that are important to the project wildlife species. Discussions around how a particular ecosystem might be mapped as part of a complex polygon should include wildlife concerns. 4-4

Communications between Field Teams: When there is more than one field crew on a project, it is important for the wildlife biologists on each field crew to maintain consistency in how they collect data and assign ratings (see Section 4.3.2 of the WHR Standards). 4-5

2.8. Field Data Capture

The wildlife habitat ratings field data from the WHA form must be entered into the VENUS data capture application for DTEIF. This DC tool can be downloaded from

<http://srmwww.gov.bc.ca/wildlife/whr/index.html>. 5-1

2.9. Final Species Habitat Models

Final Species Accounts: The preliminary species accounts should be updated or revised to reflect the findings from field sampling, discussions with the ecosystem mappers, local species and habitat experts and any additional information that has been acquired. 6-1 to 6-5

The WHR Standards (Section 4.4.4) require a reliability qualifier to be assigned to each species-habitat model. This reliability qualifier should be incorporated into the final species account and should also be identified on any habitat maps that are produced. 6-4

Final Ratings Table: After field sampling, the final ratings table is built from the updated ecosystem and wildlife habitat information. The updated ecosystem database supplies the additional ecosystems mapped and any changes to the preliminary list of unique ecosystems. The expanded legend provides more detailed ecosystem information which aids the biologist in developing the final ratings. 6-6 to 6-12

The wildlife biologist also should discuss with the project ecologist any questions on the ecosystems mapped that might be important to developing the final ratings table.

As ratings tables often have thousands to tens of thousands of cells with ratings, it is not usually possible to check every rating. However, quality assurance requires that at least 10% of the ratings should be checked.

The ratings values should correspond to the descriptions in the ratings assumptions and vice versa. Where discrepancies exist, the project biologist is responsible for addressing the source of the error. For example, the ecosystems that were identified in the ratings assumptions as having high value should show up as a high or moderately high in the ratings table. 6-3 – 6-11

It is a requirement of these QA Guidelines that quality assurance personnel run the Check Validity function of the ERM Ratings Table Tool to ensure the ratings are in valid format.

Habitat Maps: It is a requirement of these QA Guidelines that quality assurance personnel run the ERM Mapping Tool in order to ensure the map reflects the known habitat values of the project area. A quick glance at a draft habitat map is far more effective than a quick glance at a ratings table to get an overall assessment of the project wildlife values. While the WHR Standards do not require that the project wildlife contractor produce habitat maps to check the accuracy of the ratings tables, it is highly recommended that this be required as a deliverable in the project contract. 6-12 to 6-13

2.10. Wildlife Report

Draft Wildlife Report: In addition to the species-habitat models, a final report is required for the project. Section 4.4.5 of the WHR Standards describes the minimum requirements for project wildlife reports. 7-3 to 7-4

2.11. Final Deliverables

The following are the minimum requirements for WHR project final deliverables:

Species Account(s): to be submitted as described in the *WHR Data Submission Standards* (RISC, 2003). 8-1 to 8-2

Ratings Table(s): to be submitted as described in the *WHR Data Submission Standards* (RISC, 2003). 8-3

Check-Validity Results File(s): to be submitted as described in *WHR Data Submission Standards* (RISC, 2003).

Wildlife Report to be submitted as described in the *WHR Data Submission Standards* (RISC, 2003). 8-4

Project Metadata to be submitted as described in the *WHR Data Submission Standards* (RISC, 2003). 8-5

3. Checklists

The following checklists are intended to facilitate the quality assurance process for the QA contractor and the contract monitor. The completed checklists are to be submitted as part of the QA report.

☑ WHR Checklist 1: Project Coordination [Pre-Field]

1-1. Are objectives for wildlife clearly defined in the Project Plan?	<input type="checkbox"/> Yes <input type="checkbox"/> No
---	--

Comments/Recommendations:

1-2. Is the wildlife species list complete and appropriate for the project objectives?	<input type="checkbox"/> Yes <input type="checkbox"/> No
--	--

Comments/Recommendations:

1-3. Do both the biologists and the ecosystem mappers understand what ecosystem attributes are required for the wildlife habitat ratings?	<input type="checkbox"/> Yes <input type="checkbox"/> No
---	--

Comments/Recommendations:

1-4. Is the project biologist involved in the development of the initial ecosystem polygons?	<input type="checkbox"/> Yes <input type="checkbox"/> No
--	--

Comments/Recommendations:

1-5. Are the final products clearly identified early on in the project?	<input type="checkbox"/> Yes <input type="checkbox"/> No
---	--

Comments/Recommendations:



☑ WHR Checklist 2: Preliminary Species-Habitat Model [Pre-Field]

Questions 2-2 through 2-19 pertain to each individual species account. It should be clearly stated which species the Comments and Recommendations are referring to.

2-1. Is one species account provided for each species in a separate MS Word document?	<input type="checkbox"/> Yes <input type="checkbox"/> No
---	--

Comments/Recommendations:

2-2. Do the species accounts follow the format outlined in Section 4.2.3 of the WHR Standards?	<input type="checkbox"/> Yes <input type="checkbox"/> No
--	--

Comments/Recommendations:

2-3. Is the contractor using available existing species accounts?	<input type="checkbox"/> Yes <input type="checkbox"/> No
---	--

Comments/Recommendations:

2-4. If existing species accounts are being used, have they been revised to address habitat requirements specific to the project area?	<input type="checkbox"/> Yes <input type="checkbox"/> No
--	--

Comments/Recommendations:

2-5. Has the project wildlife biologist consulted with provincial and/or local habitat and species experts?	<input type="checkbox"/> Yes <input type="checkbox"/> No
---	--

Comments/Recommendations:

2-6. Is the provincial benchmark for the species clearly identified?	<input type="checkbox"/> Yes <input type="checkbox"/> No
--	--

Comments/Recommendations:

2-7. Do the subheadings of the Habitat Use section of the species account describe seasons/life requisites being rated (i.e. in the column headings of the wildlife component of the ratings table)?	<input type="checkbox"/> Yes <input type="checkbox"/> No
--	--

Comments/Recommendations:

2-8. Is it clear that the ecosystem attributes described for each habitat use will be part of the ecosystem database?	<input type="checkbox"/> Yes <input type="checkbox"/> No
---	--

Comments/Recommendations:

2-9. Are the habitats that will be rated High or Class 1 identified in the ratings assumptions?	<input type="checkbox"/> Yes <input type="checkbox"/> No
---	--

Comments/Recommendations:

2-10. Are the habitats that will be rated Nil or Class 6 identified in the ratings assumptions?	<input type="checkbox"/> Yes <input type="checkbox"/> No
---	--

Comments/Recommendations:

2-11. Do the ratings assumptions identify the maximum expected rating (e.g.	<input type="checkbox"/> Yes <input type="checkbox"/> No
---	--

ecosystem "X" will be rated up to Class 2) for all the common ecosystems?	
---	--

Comments/Recommendations:

2-12. Have the structural stages or other attribute values that will increase or decrease the ratings for an ecosystem been identified in the ratings assumptions?	<input type="checkbox"/> Yes <input type="checkbox"/> No
--	--

Comments/Recommendations:

2-13. Is the Preliminary Species Account acceptable and ready to be signed off?	<input type="checkbox"/> Yes <input type="checkbox"/> No
---	--

Comments/Recommendations:

2-14. In the preliminary ratings table, do the ratings appear logical in relation to the species-habitat descriptions in the Preliminary Species Account?	<input type="checkbox"/> Yes <input type="checkbox"/> No
---	--

Comments/Recommendations:

2-15. Are the seasons and life requisites adequately described in the species account to provide a rationale for the ratings in the ratings table?	<input type="checkbox"/> Yes <input type="checkbox"/> No
--	--

Comments/Recommendations:

2-16. Are ecosystems without ratings data, or where the ratings data is marked with a question mark (e.g., "Class 2/3?"), identified in the field sampling plan?	<input type="checkbox"/> Yes <input type="checkbox"/> No
--	--

Comments/Recommendations:

2-17. Are the ecosystems identified as having high value in the ratings assumptions showing up as such in the ratings table?	<input type="checkbox"/> Yes <input type="checkbox"/> No
--	--

Comments/Recommendations:

2-18. Are the ecosystems identified as having no value in the ratings assumptions showing up as such in the ratings table?	<input type="checkbox"/> Yes <input type="checkbox"/> No
--	--

Comments/Recommendations:

2-19. Are the low ratings valid (i.e. the reflective of the value of the habitat, not the lack of information on the species-habitat relationships)?	<input type="checkbox"/> Yes <input type="checkbox"/> No
--	--

Comments/Recommendations:

2-20. Is the preliminary ratings table acceptable and ready to be signed off?	<input type="checkbox"/> Yes <input type="checkbox"/> No
---	--

Comments/Recommendations:

✓ WHR Checklist 3: Field Sampling Plan**Pre-Field**

3-1. Does the project sampling plan include ecosystems identified in the preliminary species accounts or ratings table as having high values for the project species?	<input type="checkbox"/> Yes <input type="checkbox"/> No
---	--

Comments/Recommendations:

3-2. Does the project sampling plan include ecosystems identified in the preliminary species accounts or ratings table as having insufficient information to assign reliable ratings and that require field sampling?	<input type="checkbox"/> Yes <input type="checkbox"/> No
---	--

Comments/Recommendations:

3-3. Is the project sampling plan acceptable (i.e., providing a reasonable framework for wildlife habitat ratings assessments to be done in the field) and ready to be signed off?	<input type="checkbox"/> Yes <input type="checkbox"/> No
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Comments/Recommendations:

✓ WHR Checklist 4: Field Sampling

[Field]

4-1. Referring to DTEIF Checklist 6, is the WHA form FS 882 (5) being used for field data collection?	<input type="checkbox"/> Yes <input type="checkbox"/> No
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Comments/Recommendations:

4-2. Referring to DTEIF Checklist 6, is the plot data being collected appropriately, according to the DTEIF standards for Wildlife Habitat Assessment?	<input type="checkbox"/> Yes <input type="checkbox"/> No
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Comments/Recommendations:

4-3. Does the field sampling include at least some of the high rated habitats for each of the project species as well as the habitats for which the values are uncertain, per the WHR field sampling plan?	<input type="checkbox"/> Yes <input type="checkbox"/> No
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Comments/Recommendations:

4-4. Is the wildlife biologist maintaining good communications with the rest of the ecosystem mapping team during field work, especially regarding	<input type="checkbox"/> Yes <input type="checkbox"/> No
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information recorded on the site, soils and vegetation forms?	
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Comments/Recommendations:

4-5. If there is more than one field crew, do the wildlife biologists maintain regular communications to ensure consistency in data collection and how ratings are assigned?	<input type="checkbox"/> Yes <input type="checkbox"/> No
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Comments/Recommendations:

5-1. Has <i>all</i> the WHA field data been entered into VENUS?	<input type="checkbox"/> Yes <input type="checkbox"/> No
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Comments/Recommendations:

<input checked="" type="checkbox"/> WHR Checklist 6: Final Species-Habitat Models	Post-Field
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6-1. Have the preliminary species accounts been revised into final species accounts based on field data and any new information gathered?	<input type="checkbox"/> Yes <input type="checkbox"/> No
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Comments/Recommendations:

6-2. Specifically, have the ratings assumptions been revised to reflect data collected in the field and any additional information?	<input type="checkbox"/> Yes <input type="checkbox"/> No
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Comments/Recommendations:

6-3. Have the ecosystem attributes described for each habitat use been incorporated into the ecosystem database?	<input type="checkbox"/> Yes <input type="checkbox"/> No
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Comments/Recommendations:

6-4. Has a reliability qualifier been added to the species account that reflects the overall reliability of the species-habitat model?	<input type="checkbox"/> Yes <input type="checkbox"/> No
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Comments/Recommendations:

6-5. Are the final species accounts acceptable and ready to be signed off?	<input type="checkbox"/> Yes <input type="checkbox"/> No
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Comments/Recommendations:

6-6. Are there any missing ecosystem unit in the ratings table or missing ratings in the final ratings table? (Note, the ratings table tool is available to use – it has “missing” and “check validity” functions which identifies missing ecosystem units, missing ratings and non-valid codes.)	<input type="checkbox"/> Yes <input type="checkbox"/> No
---	--

Comments/Recommendations:

6-7. Are ecosystems identified as having high value in the ratings assumptions showing up as such in the ratings table?	<input type="checkbox"/> Yes <input type="checkbox"/> No
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Comments/Recommendations:

6-8. Do similar spot checks across other rating classes. Are there high values in the ratings table that are not identified in the ratings assumptions?	<input type="checkbox"/> Yes <input type="checkbox"/> No
---	--

Comments/Recommendations:

6-9. Are their discrepancies between the ratings table and ratings assumptions across other rating classes (moderate, low, nil)?	<input type="checkbox"/> Yes <input type="checkbox"/> No
--	--

Comments/Recommendations:

6-10. Are the low ratings valid?	<input type="checkbox"/> Yes <input type="checkbox"/> No
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Comments/Recommendations:

6-11. Have ratings in any ecosections and BGC units that occur in only a small part of the project area been checked for accuracy?	<input type="checkbox"/> Yes <input type="checkbox"/> No
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Comments/Recommendations:

6-12. Does the project contract require draft habitat maps be produced for the project biologist to assess the ratings? (Note: the WHR Mapping Tool is available to use for generating themes and checking patterns of habitat values.)	<input type="checkbox"/> Yes <input type="checkbox"/> No
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Comments/Recommendations:

6-13. If draft habitat maps are required, were they used to assess the validity of the ratings table?	<input type="checkbox"/> Yes <input type="checkbox"/> No
---	--

Comments/Recommendations:

6-14. Is the final ratings table acceptable and ready for sign-off?	<input type="checkbox"/> Yes <input type="checkbox"/> No
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Comments/Recommendations:

☑ WHR Checklist 7: Wildlife Report*Post-Field*

7-3. Does the final report include the minimum requirements in the WHR Standards?	<input type="checkbox"/> Yes <input type="checkbox"/> No
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Comments/Recommendations:

7-4. Does the final report address recommendations (if any) identified in the project objectives or otherwise required for the project?	<input type="checkbox"/> Yes <input type="checkbox"/> No
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Comments/Recommendations:

✓ WHR Checklist 8: Summary Checklist of Final Products

8-1. Are the species accounts in MS Word with each species account in a separate document and using the naming conventions that are identified in the <i>Standards for WHR Digital Data Capture</i> ?	<input type="checkbox"/> Yes <input type="checkbox"/> No
---	--

Comments/Recommendations:

8-2. Are the final species accounts acceptable?	<input type="checkbox"/> Yes <input type="checkbox"/> No
---	--

Comments/Recommendations:

8-3. Does the final ratings table contain zero invalid entries when checked with the “Check Validity” function of the ratings table tool?	<input type="checkbox"/> Yes <input type="checkbox"/> No
---	--

Comments/Recommendations:

8-4. Is the final wildlife report acceptable?	<input type="checkbox"/> Yes <input type="checkbox"/> No
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Comments/Recommendations:

8-5. Does the name and contents of the metadata file conform to definitions described in the <i>Standards for WHR Digital Data Capture</i> (RISC, 2003)?	<input type="checkbox"/> Yes <input type="checkbox"/> No
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Comments/Recommendations:

4. Sign-off Forms for WHR QA

QA Summary

Please provide a summary of the overall QA of the inventory and include any additional comments not covered in the forms above. If project deliverables are unacceptable, a new summary form must be completed for each subsequent submission including the submission number, date of submission and comments as to whether or not the recommendations have been adequately incorporated.

Submission # _____ Date of Submission: _____

WHR Sign-off Form 1: Prefield QA

Project Coordination

Acceptable Unacceptable (see recommendations below)

Comments/Recommendations:

Preliminary Species-Habitat Model

Acceptable Unacceptable (see recommendations below)

Comments/Recommendations:

Field Sampling Plan

Acceptable Unacceptable (see recommendations below)

Comments/Recommendations:

Pre-field QA Sign-off

The pre-field preparations, preliminary species-habitat models and sampling plan are acceptable and field work can begin.

Print Name of QA Contractor Signature Date

Submission # _____ **Date of Submission:** _____

WHR Sign-off Form 2: Field QA

Acceptable Unacceptable (see recommendations below)

Comments/Recommendations:



WHR Sign-off Form 3: Post-Field QA

Data Entry and Analysis

- Acceptable Unacceptable (see recommendations below)

Comments/Recommendations:

Final Species-Habitat Models

- Acceptable Unacceptable (see recommendations below)

Comments/Recommendations:

Final Wildlife Report

- Acceptable Unacceptable (see recommendations below)

Comments/Recommendations:

Additional Comments:

References

BC Wildlife Habitat Rating Standards. Version 2, 1999. Terrestrial Ecosystem Task Force, RIC, Victoria, BC.

Field Manual for Describing Terrestrial Ecosystems. 1998. BC Ministry of Environment, Lands and Parks; and BC Ministry of Forests, Victoria, BC.

Quality Assurance Guidelines: Describing Terrestrial Ecosystems in the Field (DTEIF), 2003. RISC, Victoria, BC.

Quality Assurance Guidelines: Terrestrial Ecosystem Mapping (TEM). 2003. RISC, *Quality Assurance Guidelines: Terrestrial Ecosystem Mapping– Digital Data Capture (TEM-DDC)*. 2002. RISC, Victoria, BC.

Quality Assurance Guidelines: Predictive Ecosystem Mapping (PEM). 2003. RISC, Victoria, *Quality Assurance Guidelines: Predictive Ecosystem Mapping– Digital Data Capture (PEM-DDC)*. 2002. RISC, Victoria, BC.

Quality Assurance Guidelines: Vegetation Resources Inventory (VRI), [date]. RISC, Victoria, BC.

Quality Assurance Guidelines: Wildlife Habitat Rating (WHR), 2003. RISC, Victoria, BC.

Quality Assurance Guidelines: Wildlife Inventory, 2003. RISC, Victoria, BC.