



INTRODUCTION

At Risk Ecological Communities (AREC) are groups of plant species that exist together in an area, making up an ecological community. For BCTS, an At-Risk Ecological Community (AREC) is an ecological community that meets one or more of the following attributes:

- Red or Blue listed
- Critically imperiled or imperiled
- Listed on a schedule of legislated Orders
- included on the list of plant communities under the Identified Wildlife Management Strategy

Currently, biodiversity is managed at the landscape level through implementation of Old Growth Management Areas (OGMA's), Wildlife Habitat Areas (WHAs), Ungulate Winter Ranges (UWRs), Parks, and other types of protected areas; however, lack of reliable site series information makes it difficult to assess site series representation across these large, protected areas. Therefore, to ensure AREC are adequately protected, a stand-level approach is required to manage sites when encountered during forest development. This approach is in line with BC Timber Sales (BCTS) commitment to the Sustainable Forestry Initiative (SFI). In particular, SFI Objective 4 and Indicator 4.2.2 aim to locate and protect known sites of flora and fauna associated with viable occurrences of critically imperiled and imperiled species and ecological communities. Moreover, ecological communities are now defined in the Forest and Range Practices Act (FRPA) as "a group of different species occupying a particular area", which allows for classification, designation, and protection through Government Actions Regulation (GAR) of AREC. This stand-level approach will help meet the objectives of the Sustainable Forestry Initiative and protect vulnerable ecological communities.

SFI OBJECTIVE 4- CONSERVATION OF BIOLOGICAL DIVERSITY

Objective 4: *To maintain or advance the conservation of biological diversity at the stand and landscape level and across a diversity of forest and vegetation cover types and successional stages including the conservation of forest plants and animals, aquatic species, threatened and endangered species, Forest with Exceptional Conservation Value, old-growth forests, and ecologically important sites.*



***SFI Indicator 4.2.2.:** To locate and protect known sites of flora and fauna associated with viable occurrences of critically imperiled and imperiled species and ecological communities, defined as Forests with Exceptional Conservation Value. Programs for protection may be developed independently and/ or through cooperative efforts involving SFI Implementation Committees and may include Certified Organization managers, cooperation with other stakeholders, or use of easements, conservation land sales, exchanges, or other conservation strategies.*

APPLICATION OF THIS SOP:

This SOP is intended to be used during forestry planning, timber reconnaissance, block and road development, site plan data collection, and other applicable field work by BC Timber Sales staff, Timber Sales Licence holders, and contractors working in the BCTS Strait of Georgia (TSG) business area. This document applies to the BCTS managed areas within the Campbell River and South Island Resource Districts which are all considered part of the Strait of Georgia Business Area. These are inclusive of areas overlapped by [Forest Stewardship Plans \(FSP\)](#) in the business area, which change periodically:

- West Coast FSP
- Campbell River FSP
- Pacific Maritime FSP
- Seaward-tlasta FSP (in South Central Coast Great Bear Rainforest)
- Any other land tenure in which BCTS TSG operates as a forest land management partner with 3rd party entities, e.g., community forests, disposition agreements, etc. (note that if timber is to be sold as SFI certified, then this and other aspects of the SFI Certification program must be applied)

OVERVIEW

FOCUS LIST AND DISCRIPTION SUMMARIES

The TSG AREC master focus list was derived from the BC Conservation Data Centre (CDC) Species and Ecosystems Explorer tool, inclusive of all plant communities that were rated as high based on the risk rating system or rated as medium within a forested ecosystem. Some AREC communities with a medium risk rating in non-forested ecosystems may be noted as they could be encountered and disturbed by road building activities, or development and maintenance of log handling facilities.



Many identified AREC on the focus list have a corresponding vegetation and environmental summary found on the [BC CDC Species and Ecosystems Explorer tool](#). The summary provides a detailed description of physical characteristics and vegetation that is present in each occurrence of the ecological community that can be used for field verification. At this time not all identified AREC have a description summary with the BC CDC, and instead the description and vegetation table from the [Land Management Handbook \(LMH\) #28](#) should be used to ensure alignment with the tree and plant species observations for the potential AREC. If a description is available for an AREC from the BC CDC, it has been added to the [TSG AREC Masterlist](#).

EXPERIENCE CONSIDERATIONS

To effectively identify potential AREC in the field, it is beneficial for the assessor to have the following experience:

- Knowledge of indicator plants, and the ability to identify them in the field
- Familiarity using BEC Field Guides ([LMH 28](#))
- Experience in field identification and confirmation of BEC site series within the local geographic location
- Proficiency collecting and preparing ecological data for cutblock Site Plans (Registered Professional Forester (RPF) /Registered Forest Technologist (RFT)) OR an experienced professional field ecologist (Registered Professional Biologist (RPBio)).

If the assessor does not meet the competency requirements listed above, they should work under the direct supervision of an assessor who does meet them (Site Plan Forester or Ecologist).

TIMING CONSIDERATIONS

Ideally, assessments should take place during spring and summer. During these seasons, vegetation growth reaches its peak, enabling detailed documentation of plant species. This increased visibility enhances the chances of accurately identifying plant communities and mapping out occurrences. Care should be taken to try to ensure field work is completed at the appropriate time of year.

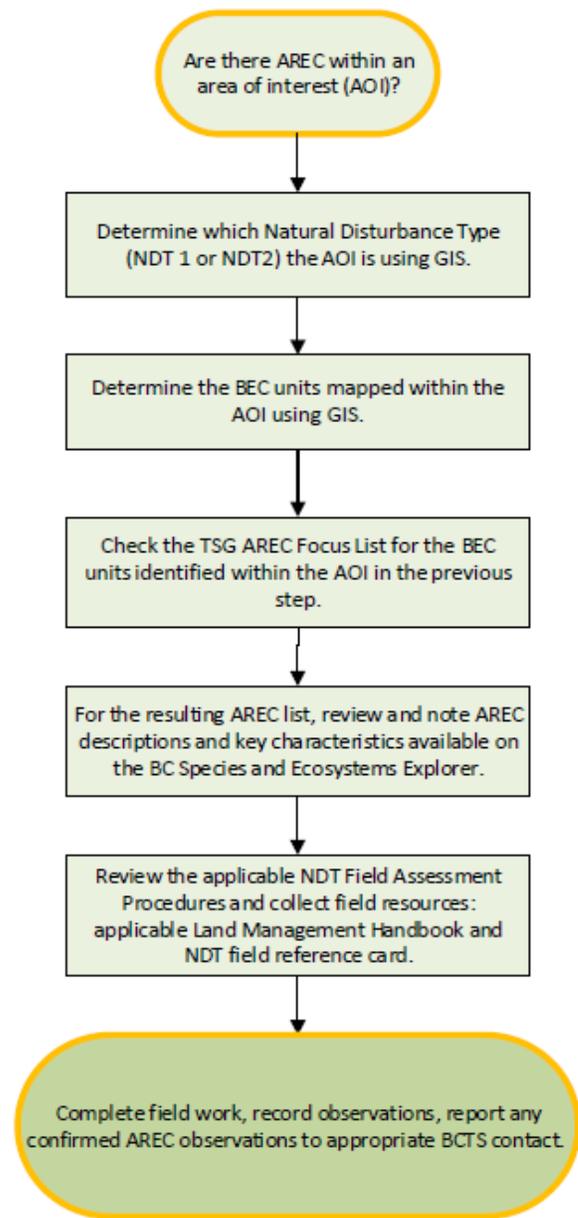


STAND LEVEL MANAGEMENT PROCEDURE

PRELIMINARY CHECK

Before work in the field begins, staff and contractors are expected to complete a preliminary check of the area of interest (AOI) to determine if there is potential overlap with an AREC. The steps are outlined in the flowchart below.

1. Determine which NDT type comprises the AOI (BC Geographic Warehouse (BCGW) [Natural Disturbance Type Map \(gov.bc.ca\)](https://www.gov.bc.ca/natural-disturbance-type-map/))
 - NDT1 – ecosystems with rare stand-initiating events
 - NDT2 – ecosystems with infrequent stand-initiating events
2. Check Biogeoclimatic Classification (BEC) mapping for AOI
3. Review the TSG Focus list to determine if BEC units identified in AOI are AREC;
 - [Strait of Georgia AREC Focus List \(XLSX\)](#)
4. For any identified potential AREC, review and note descriptions and key characteristics to help with identification in the field;
5. Review applicable NDT Field Assessment Procedures, download NDT Field Reference Card and collect field resources;
 - See BCTS representative for complete NDT procedure documents





ONCE PRELIMINARY CHECK IS COMPLETE, FOLLOW THOROUGH STEP-BY-STEP FIELD PROCEDURES TO GUIDE THE USE OF THE APPLICABLE FIELD CARD FOR THE APPROPRIATE NDT.

THE PROCEDURES AND FIELD CARDS ARE TO BE USED IN ADDITION TO THIS SOP.

OBSERVATION TYPES

When identifying a potential AREC in the field, it is important to ensure that the tree and plant species align with the descriptions provided by the BC CDC Species & Ecosystem Explorer and/or the vegetation tables and summaries from LMH 28. Note that the observed site series does not necessarily have to match the listed BEC site series on the AREC Focus List spreadsheet, as the downloaded CDC data may not include all BEC units or series where the AREC is found.

Potential AREC site series may be observed as per the following two definitions:

1. a discrete observation – a single site series, or almost entirely a single site series which supports an identified AREC, and is a minimum of 0.25 ha; or,
2. A complex observation – a mosaic of two or more site series (unable to be mapped separately due to spatial complexity) which support one or more identified ARECs and the AREC exists as the dominant component.
 - a. If in NDT1, a complex observation must be ≥ 2.0 ha.
 - b. If in NDT2, a complex observation must be ≥ 1.0 ha.

If the occurrence is below the size thresholds for a discrete or complex observation, then no further management actions are required. If the observation meets the vegetation description and size requirements and is either within an obviously old (>250 years) forest or within a non-forested ecosystem, the observation is confirmed AREC and the retention guidelines should be followed.



AGE CRITERIA

Forests must be at mature or old stages of forest development to be able to support an AREC with a well-developed understory. The stand should be exhibiting signs of mid to late successional status with structural age of 6 – mature or 7 – old to be considered (refer to field cards for complete definitions). Natural disturbance types and BEC zone also influence seral stage ages that are used to confirm the AREC observation. It should be noted that if a suspected AREC observation is within a stand is greater than 250 years old, regardless of BEC or NDT type, the observation is confirmed AREC.

Table 1: Seral Stage Ages for NDT and BEC Zones for TSG Business Area (BA)

NDT 1 and NDT 2 in TSG BA		
BEC Zone	Mature	Old
CWH, CDF	>80 years	>250 years
MH	>120 years	

MANAGEMENT GUIDELINES

Two specified legislated orders within the TSG BA have been identified as having AREC protection requirements, including the Great Bear Rainforest Order (GBRO) (2023), and the Government Action Regulation (GAR) Order for the Identified Wildlife Management Strategy (IWMS) Category of Species at Risk (SAR) (2011). Guidelines for retention vary between specified legislated orders and non-legislated areas in the rest of the BCTS TSG operating area. After an AREC observation is confirmed, it must be reported to the appropriate BCTS contact and applicable management guidelines should be followed.

GBRO RETENTION GUIDELINES

The GBRO supersedes this AREC SOP. To comply with the GBRO, if an AREC is listed as a red or blue listed ecosystems in GBRO [Schedule N](#) or [O](#), the occurrence must be managed as per the GBRO FSP strategy and the decision-making process from [Land Management Handbook \(LMH\) 72](#) must be followed.



BCTS TSG Focus List AREC found within the GBRO Area that are not schedule N or O red or blue listed ecosystems, are managed according to this SOP.

IWMS PLANT COMMUNITIES RETENTION GUIDELINES

The FRPA Category of Species at Risk GAR Order provides the most recent update to AREC names that were previously established in 2004, 2005, and 2006. Table 2 presents the current list of red and blue listed AREC protected under GAR Order that may be found within TSG operating areas. These AREC are included in the BCTS TSG AREC Focus List spreadsheet.

Table 2: Category of Species at Risk Protected Plant Communities under GAR Order for NDT1 and NDT2 in BCTS TSG BA

AREC English Name	NDT	Link to Accounts and Measures Document	Notes
Douglas-Fir/Alaska Oniongrass	NDT2	PDF	Red Listed/Forested
Douglas-Fir/Dull Oregon-Grape	NDT2	PDF	Red Listed/Forested
Western Hemlock-Douglas-Fir/Electrified Cat’s-Tail Moss	NDT2	PDF	Blue Listed/Forested
Western Redcedar-Douglas-Fir/Vine Maple	NDT2	PDF	Blue Listed/Forested
Western Redcedar/Devils Club	NDT 2	PDF	Blue Listed/Forested

Although these IWMS plant communities require protection under GAR Order, management direction is lacking. Presently, there are no stand-level guidance documents providing objectives nor advice respecting the AREC listed in Table 2. Landscape-level planning recommendations for WHAs are provided in the [Procedures for Managing](#)



[Identified Wildlife](#) document. In 2004, specific information and habitat management guidelines were released for each plant community (as per the document links in Table 2), in the [Accounts and Measures for Managing Identified Wildlife](#), but these have not been updated. Refer to the Accounts and Measures documents for detailed information about each plant community, and apply stand-level management recommendations for conservation, where applicable. If fieldwork observations result in a confirmed AREC, listed as protected under GAR Order (Table 2), refer to general non-legislated retention guidelines below.

GENERAL NON-LEGISLATED RETENTION GUIDELINES

As the majority of the TSG area falls outside of the legislated protection requirements, general retention requirements have been established for the remaining business area.

RED LISTED CONFIRMED AREC

Recommended retention requirements are as follows:

- Non-operable areas: Protect 100% of the confirmed AREC in a WTRA.
- Non-forested ecosystems: Protect the confirmed AREC in a WTRA.
 - Up to 5% may be altered or harvested for road access, infrastructure, or to address a safety concern.
- Operable areas: Protect the confirmed AREC in a WTRA.
 - If old forest, up to 5% may be altered or harvested for road access, infrastructure, or to address a safety concern
 - If mature forest, up to 10% may be altered or harvested for road access, infrastructure, or to a safety concern.

BLUE LISTED CONFIRMED AREC

Recommended retention requirements are as follows:

- Non-operable areas: Protect 100% of the confirmed AREC in a WTRA.
- Non-forested ecosystems: Protect the confirmed AREC in a WTRA.
 - Up to 30% may be altered or harvested for road access, infrastructure, windthrow management, ecological restoration, other primary harvesting activities, or to address a safety concern.



- Operable areas: Protect the confirmed AREC in a WTRA.
 - If old forest, up to 30% may be altered or harvested for road access, infrastructure, windthrow management, ecological restoration, other primary harvesting activities, or to address a safety concern.
 - If mature forest, up to 50% may be altered or harvested for road access, infrastructure, windthrow management, ecological restoration, other primary harvesting activities, or to address a safety concern.

MINIMUM RETENTION AREA SIZES

Recommended minimum retention area sizes are as follows:

- If the confirmed AREC is ≤ 0.5 ha, recommend establishing a WTRA at least twice the size of the confirmation.
- If the confirmed AREC is ≤ 1.0 ha, recommend establishing a WTRA at least 1.0 ha in size.
- If the confirmed AREC is > 1.0 ha, recommend establishing a WTRA equal to the size of the confirmation, with applied buffers to maintain interior forest conditions as per best management practices for reserve designs.

BEST MANAGEMENT PRACTICES FOR RESERVE DESIGNS

It is recommended to incorporate the guidance from appendix 2 of LMH 72 for confirmed AREC to enhance the reserve design of the WTRA:

- buffer the AREC with structurally diverse forest by at least one tree length or more
- create a larger reserve shape that minimizes edge effects (e.g., circular/square, and not long/linear)
- larger reserves (> 2 ha) are better than small reserves (< 1 ha)
- consider local operational area elements such as:
 - proximity to higher level reserves
 - forest patch size, characteristics, and configuration
 - risk of windthrow
 - hazards and safety requirements
 - other stand retention requirements
- create a ≥ 1 ha reserve, where practicable



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The following points outline key elements to include within WTRAs to maintain biodiversity, as collated from the Biodiversity Guidebook (1995):

- wildlife trees (including standing live, dead and dying trees) with special characteristics that provide habitat for conservation or wildlife enhancement including:
 - large size (diameter/height)
 - veterans
 - old condition, age, decay stage
 - evidence of use - e.g., nest trees
 - valuable species or relative scarcity
 - critical habitat (denning, shelter, roosting, foraging) for vertebrates, insects, mosses/lichens
 - habitat for birds, bats & other small mammals that perform roles in maintaining ecosystem function
 - deciduous
 - largest size defective trees (large, live, unhealthy)
 - heart rot trees
- include stand level diversity such as: riparian areas, rocky outcrops, gullies, hardwood patches, meadows, tree species diversity, understorey vegetation diversity, coarse woody debris
- include structural diversity such as patches of advanced regeneration
- rangelands should ensure shrub components are maintained
- ensure WTRA is subject to minimal windthrow – apply [Windthrow Management TSG SOP](#) and [Windthrow Management Manual](#) (2022) to develop prescriptions, where required
- include areas subject to difficult harvesting/yarding operability, or areas that may be difficult to regenerate after harvest
- apply an irregular shape to reflect natural disturbance patterns
- ensure connectivity with other biological reserves or anchors where possible

The Provincial Wildlife Tree Retention Management Guidance Document (2006) provides additional useful information for establishing WTRA and suggests using important ecological features in stands with high conservation value as anchor points.



Ensure the TSG BCTS [Forest Stewardship Plans](#) are adhered to while designing WTRA for AREC.

REPORTING CRITERIA

Protecting confirmed AREC by establishing WTRA at the stand-level is the quickest way to preserve red listed and blue listed ecological/plant communities; however, the WTRA may not provide long-term protection, as legislation allows WTRA to be amended and logged in future rotations. To prevent future incidental harvest, WTRA's should be flagged as AREC in LRM and RESULTS. There are two ways to flag the WTRA and prevent future harvest:

1. For WTRA associated with a cutblock, "create a 'RESERVE' polygon with an Objective Code of 'BIO' with a comment of 'AREC'."
2. For AREC not associated with a cutblock, "create a shell opening in LRM/RESULTS with an Objective Code of 'BIO' and a comment of 'AREC'."

All ARECs must be mapped and documented in the WTRA section of the Site Plan including the rationale for the placement of the WTRA. Include shape files and all relevant information about the AREC in the final submission.

If the site plan is completed through a multiphase contractor, the signing Site Plan (SP) Forester must submit details of the confirmed AREC to the BC Conservation Data Center (CDC) using the [Incidental Observations submission process](#). The [Incidental Observation Template](#) provides clear instructions for submitting the observation to the CDC. Ensure the submission includes the following information:

- General data – date, AREC name, observer/contact, location
- Spatial file of the polygon shape of the AREC – with details on the spatial accuracy
- Habitat description
- Plot data on field forms such as [FS882](#) or [FS1333](#) or thorough and complete field notes scanned and submitted

The SP Forester must notify to the designated RESULTS submitter if WTRA contains AREC, as the comment for the WTRA will need to be manually added to RESULTS XML submission post-creation. The SP forester must also inform the BCTS contract representative about the AREC observation and submit the details of the CDC submission to BCTS as well. If the



site plan is completed by a BCTS Practices Forester, the Practices Forester must ensure the AREC is properly submitted to the CDC following the details above. In both cases, the BCTS contact must fill out the internal BCTS CDC Incidental Observation Tracker, found in the AREC procedures folder.

ADDITIONAL RESOURCES AND REFERENCES

BC Conservation Data Centre:

- [iMap Tool](#)
- [Species and Ecosystem Explorer Tool](#)
- [Submit Terrestrial Ecosystem Data & Information](#)

[TSG AREC Focus List \(with descriptions\)](#)

[BCTS AREC Intranet Site](#) (For BCTS Employees)

- [NDT1 Field Procedure](#)
- [NDT1 Field Card](#)
- [NDT2 Field Procedures](#)
- [NDT 2 Field Card](#)

Great Bear Rainforest:

- [Great Bear Rainforest Order \(2023\)](#)
- [Schedule N: Red-Listed Plant Communities](#)
- [Schedule O: Blue-Listed Plant Communities](#)

Forest and Range Practices Act (FRPA) Category of Species at Risk:

- [Identified Wildlife Management Strategy \(IWMS\) plant communities](#)
- [Category of Species at Risk Government Action Regulation Order \(2011\)](#)
- [Government Actions Regulation](#)

Guidebooks

- [A Field Guide for Site Identification and Interpretation for the Vancouver Forest Region – Land Management Handbook 28 \(1994\)](#)



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- [Guidelines to Support Implementation of the Great Bear Rainforest Order with Respect to Old Forest and Listed Plant Communities - Land Management Handbook 72 \(2019\)](#)
- [Procedures for Managing Identified Wildlife \(2004\)](#)
- [Biodiversity Guidebook \(1995\)](#)
- [The Provincial Wildlife Tree Retention Management Guidance Document \(2006\)](#)
- [Windthrow Management Manual for Coastal British Columbia \(2022\)](#)

Approved by:

A handwritten signature in black ink that reads "Norman Kempe". The signature is written over a horizontal line.

Norm Kempe
Timber Sales Manager
BCTS Strait of Georgia
2024



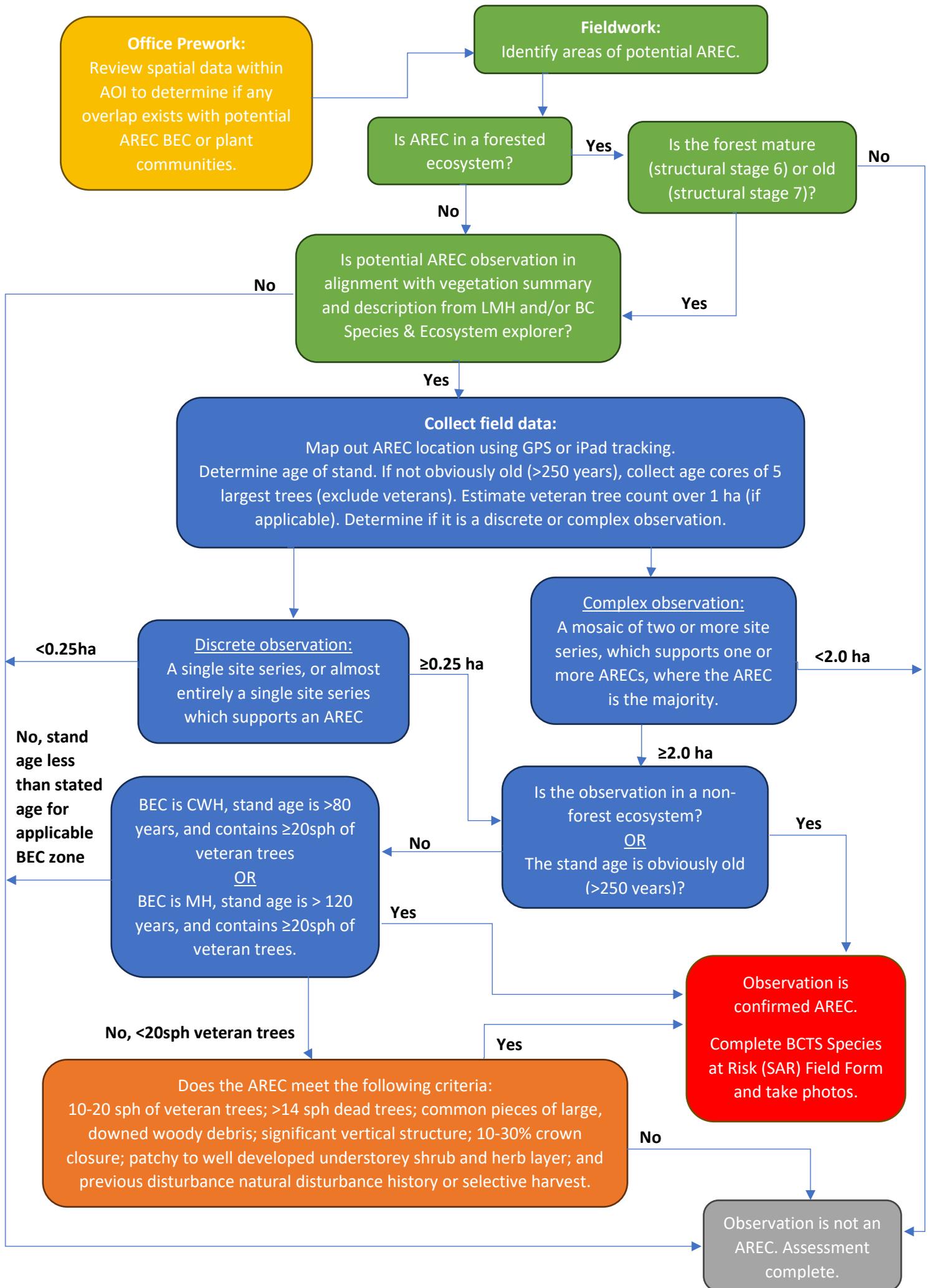
APPENDIX

1. FIELD DATA COLLECTION REQUIREMENTS

If an AREC from the Focus List is identified in the field, complete BCTS Species at Risk (SAR) Field Observation form (or similar), map location using GPS or iPad tracks and take representative photos. Suggested plot size is 10 m x 10 m. Minimize edge effects by establishing the plot at least one tree length into the stand from any edges. At a minimum, collect the following data and contact the applicable BCTS Practices Forester as soon as possible:

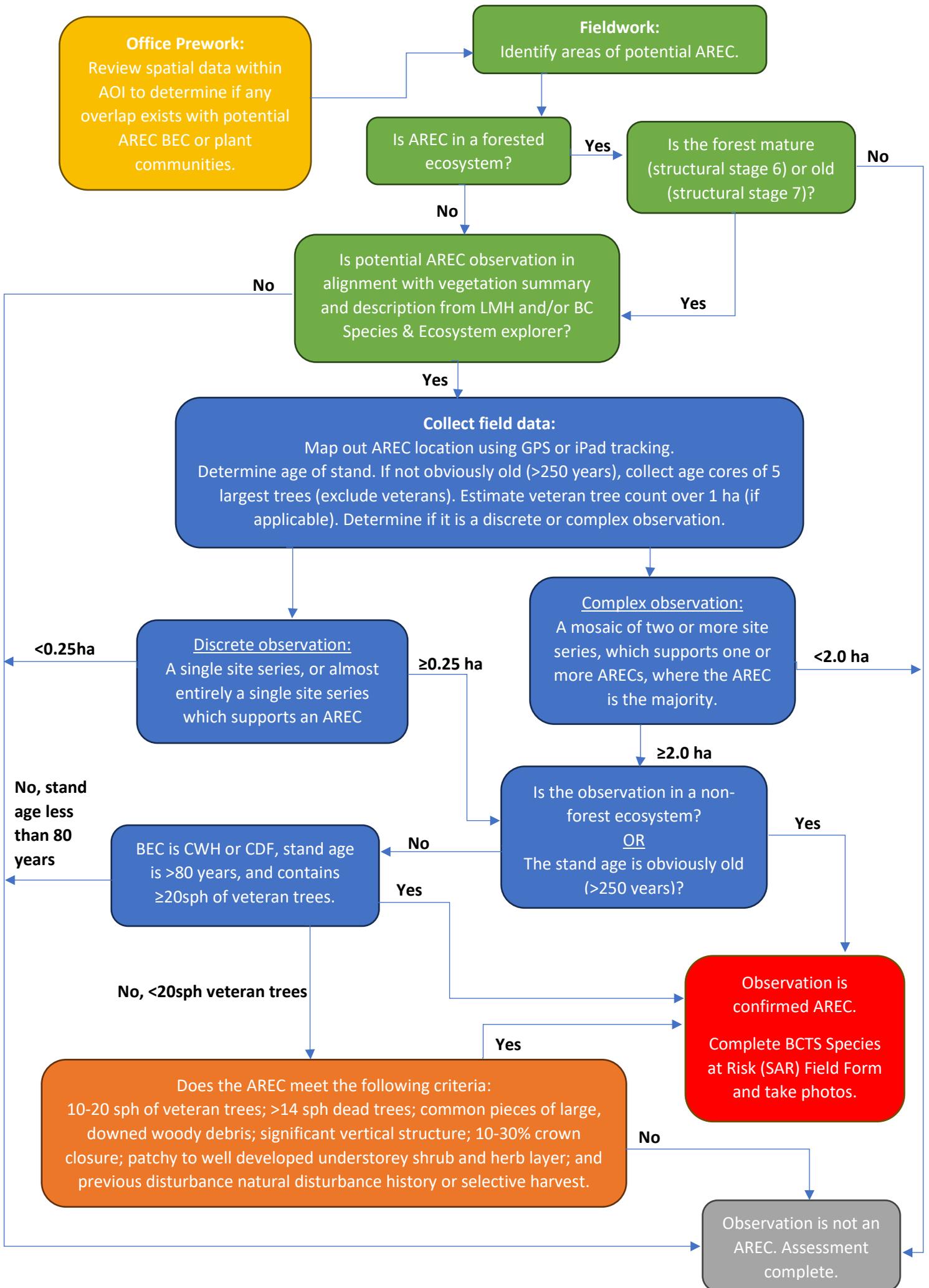
1. Observer Details
 - a. Name
 - b. Date Observed
 - c. Location Information
2. AREC Observation
 - a. AREC name
 - b. BEC unit (zone/subzone/variant/phase/) and site series
 - c. Soil moisture regime (SMR) and soil nutrient regime (SNR)
 - d. Area/size of AREC
 - e. List of Vegetation and percent cover
 - i. Tree species, shrubs, herbs, mosses/lichens
3. AREC Confirmation
 - a. Forested ecosystem?
 - b. Stand age - Mature or old forest?
 - c. AREC summary in alignment with field observations?
 - d. Discrete or complex observation?
4. Comments to support Assessment
 - a. What NDT assessment was completed in
 - b. What steps were taken to confirm AREC
5. Operability observations
 - a. Is the AREC in the operable area?
 - b. Is it in or near established protected areas?
 - c. Is the AREC location impeding access to current or future development?
 - d. Are there any safety issues?
6. Photographs
 - a. One in each cardinal direction
 - b. Of the representative vegetation
 - c. Of the tree crown

AT RISK ECOLOGICAL COMMUNITIES (AREC) DECISION MATRIX FOR NDT1



****Note:** If the potential AREC is forested, >250 years old, meets the size requirements for a discrete or complex observation, but is NOT in alignment with the vegetation summaries, the observation should still be recorded as confirmed AREC. Even if the stand has not fully reached the climax stage of vegetation development, it is still inherently rare and should be protected. This gives the ecosystem the ability to continue to develop into alignment with the vegetation summaries.

AT RISK ECOLOGICAL COMMUNITIES (AREC) DECISION MATRIX FOR NDT2



****Note:** If the potential AREC is forested, >250 years old, meets the size requirements for a discrete or complex observation, but is NOT in alignment with the vegetation summaries, the observation should still be recorded as confirmed AREC. Even if the stand has not fully reached the climax stage of vegetation development, it is still inherently rare and should be protected. This gives the ecosystem the ability to continue to develop into alignment with the vegetation summaries.