



# Kootenay-Boundary BEC Update



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## Background

- BEC mapping and site classification are fundamental to many forestry, planning, and conservation initiatives.
- Due to improved knowledge and information, BEC has changed considerably over the past 15 years.
- The most current version of BEC mapping is version 7, released in March 2008 and available on the LRDW and BECWeb - <http://www.for.gov.bc.ca/hre/becweb/>. Users should check this site for updates each new fiscal year or use the LRDW for the "official" version.
- In the Kootenay Boundary area, the most recent site series classifications are LMH 20 – Braumandl and Curran 1992 and, for the IDFxh4, ICHdw2, ICHdm, and ESSFdm, a supplement to LMH 20 – Braumandl and Dykstra 2005. These are available online at: <http://www.for.gov.bc.ca/hre/becweb/resources/classificationreports/regional/neguides.html>
- Over the next 1- 3 years, BEC users should expect changes to virtually all units in the Kootenay/Boundary.
- This update provides a summary of current and proposed changes to BEC in the Rocky Mountain, Arrow-Boundary, Kootenay Lake, and Columbia Forest Districts.

## Changes to Rocky Mountain Forest District (DRM)

- Draft site series were developed for all BEC units in DRM except ESSFwm, ICHdw1, ICHmw1, and ESSF woodland and parkland (Lloyd et al. 2006, updated in July 2007).
- Site classification is currently undergoing review and correlation. Pending funding, a final classification is anticipated in early 2010.
- The following table summarises links between past and current *names* for each of the BGC units in DRM:

Current BEC unit (as mapped in 2008) <sup>1</sup>	Historic BEC unit	Date name changed	Current Site Series classification to use (1992 <sup>2</sup> unless noted)
PPdh2 <sup>3</sup>	PPdh2	No change since 1990s	PPdh2
IDFdm2	IDFdm2	No change since 1990s	IDFdm2
No longer exists	IDFdm2a	2008	IDFdm2
IDFvk	IDFun	2006	??? <sup>5</sup>
IDFdk5	IDFdm2N	2008	IDFdm2
ICHmk4	ICHmk1	2008	ICHmk1
MSdk1	MSdk	2008	MSdk
MSdk2	MSdk	2008	MSdk
ESSFdk1	ESSFdk	2008	ESSFdk
ESSFdk2	ESSFwm and ESSFdk	2006, 2008	ESSFdk <sup>5</sup>
ESSFwm	ESSFwm	Currently under review	ESSFwm
ESSFdm	Mostly ESSFwm	2003, site series Nov 2005	ESSFdm (Braumandl and Dykstra 2005)
ICHdm	ICHmw2 / MSdk	2003, site series Nov 2005 <sup>4</sup>	ICHdm (Braumandl and Dykstra 2005)
ICHdw1	ICHdw	dw1 in 2003; currently under review (2010)	ICHdw
ICHmw1	ICHmw1	No change since 1990s	ICHmw1

<sup>1</sup> As of BEC version 7; March 2008

<sup>2</sup> Use LMH 20 – Braumandl and Curran 1992 unless otherwise stated

<sup>3</sup> Unresolved suggestion to change name to IDFxh3

<sup>4</sup> Mapping is expected to change in portions of the upper St Mary's area (to ICHmw2) in 2010

<sup>5</sup> Contact Deb MacKillop, Ecologist in Nelson if you have questions

## Changes to Arrow (DAB) and Kootenay Lake (DKL) Forest Districts

### *ICHmw4, ESSFwc5, ESSFwc6*

- South of the West Arm, the District Boundary has served as a BEC line since 2003.
- On the Kootenay Lake side, subzone/variants include the new ICHmw4, ESSFwc5, and ESSFwc6. In Arrow, similar units are still (officially) mapped as ICHmw2, ESSFwc1, ESSFwc4.
- Based on field sampling in 2007 and 2008, the ICHmw4, ESSFwc5, and ESSFwc6 will be extended to include areas to the height of land north of the West Arm (in Kootenay Lake), from Coffee Creek to Slocan Ridge, and east to the Columbia River in Arrow (see attached map).
- No official site series have been created for these new units; drafts were produced in 2008 and will be available for review and correlation in April 2009.
- Official mapping and site series will be released once correlation is complete.
- Please contact me if you would like to review new site series and mapping. Your input would be appreciated.

### *ICHdw1, ICHxw, IDFun, ESSFwm*

- Site classification for these units is currently inadequate. The ICHdw1 and ESSFwm were last described in the 1992 Nelson Field Guide, and only have 4 site series options in each. No site series have been officially described for the ICHxw and IDFun.
- Developing new classifications is a high priority, primarily for the ICHdw1 and ESSFwm, which are extensive.
- It is possible that the ICHdw1 may become two units, one describing the warmer, often lower and southern areas, another describing the cooler, often upper and northern areas. Additional field sampling is planned for summer 2009, with a draft for review available in early 2010.
- The ESSFwm is currently mapped in the Purcells, Fernie area, Beaver River (Glacier), and South Selkirks.
- The area in the South Selkirks is changing to ESSFwc5 and ESSFwc6. It is likely that the area in Fernie will be separated from the others. Additional sampling is required to determine the fate of the Purcell and Beaver areas.

### *Interim Draft Site Series for the ICHmw2, ICHwk1, ICHvk, ESSFwc1, ESSFwc4*

- Draft new site series have been developed for most of the “wet belt” and include all subzone/variants in the old Nelson Region that also occur in the old Kamloops Region (Lloyd et al. 2005).
- Based on review and field testing in 2007 and 2008, additional sampling is required in some of these units to reflect conditions in Arrow and Kootenay Lake and potential differences from Okanagan/Shuswap.
- Draft materials are available on an ftp at:  
[ftp://ftp.for.gov.bc.ca/RSI/external!/publish/Dennis\\_Lloyd\\_BEC\\_Materials/](ftp://ftp.for.gov.bc.ca/RSI/external!/publish/Dennis_Lloyd_BEC_Materials/)
- Until new BEC is released, all management activities should continue to use LMH 20 (Braumandl and Curran 1992) for work in the former Nelson Forest Region.

### *Woodland mapping in Arrow*

- The “ESSF Woodland” concept was introduced to BEC in 2002 to describe the upper portion of the ESSF.
- Woodland stands have lower productivity and are considered beyond the upper “biological” operability line for timber harvest.
- In contrast to the more open parkland above, the woodland has continuous or nearly continuous, open or clumpy canopies.
- Woodland is considered important habitat for caribou and grizzlies.
- Woodland has been mapped throughout much of the province, including Kootenay Lake and Rocky Mountain districts. Woodland has not been mapped in Arrow (or Revelstoke).
- Work to identify the woodland boundary is underway, using existing data, remote sensing, and modeling; additional field sampling is planned for summer 2009 to confirm boundaries and develop site series.
- Woodland mapping in Arrow is a high priority for improving land use planning and TSR. Determination of the Woodland boundary will be consistent between Arrow and Kootenay Lake.

### *Consistency between BEC lines at adjacent Districts*

- Historically, BEC mapping revisions were developed on a district-by-district basis.
- Arrow and Columbia were mapped in 2001, Kootenay Lake in 2003, and Rocky Mountain in 2008. In some areas, this has led to differences in elevation boundaries between adjacent districts.
- For example, in much of Arrow, the ESSFwc1 extends to ~1700 m, while at similar latitudes, the upper boundary is at 1650 m in Kootenay Lake. BEC lines will be field-checked and revised for consistency between districts.

## Changes to Columbia Forest District (DCO)

### *Interim Draft Site Series for the “wet belt”*

- As summarised above for Arrow and Kootenay Lake, draft site series are under development and review for the wetbelt.
- This includes the following BEC units: ICHmw2, ICHmw3, ICHwk1, ICHvk, ESSFwc1, ESSFwc4, ESSFvc, ESSFwc2, ESSFwcv, and ESSFvcw.
- Although draft site series have been developed, BEC mapping has not been reviewed for the wet belt portion of DCO since 2001.
- Based on feedback from licensees, parks, and other agencies, some revisions are required.

### *Golden*

- For the Golden portion of DCO, most changes were last made in 2001, although extensive changes to the southern area were made in 2008 in conjunction with changes to DRM.
- Changes in 2008 are summarised in the following table:

<b>Current BEC unit as of BEC ver7, March 2008</b>	<b>Historic BEC unit</b>	<b>Date name changed</b>	<b>Current Site Series classification to use (from LMH 20 – 1992<sup>1</sup> unless noted)</b>
IDFdk5	IDFdm2N	2008	IDFdm2
ICHmk4	ICHmk1	2008	ICHmk1
MSdk2	MSdk	2008	MSdk
ESSFdk2	ESSFwm and ESSFdk	2006, 2008	ESSFdk <sup>2</sup>

<sup>1</sup> Use LMH 20 (1992 Field Guide) unless otherwise stated; <sup>2</sup> Contact me if you have questions.

- Draft site series for these new variants are under development (Lloyd et al. 2006, updated in 2007), but are not anticipated until early 2010.
- Pending funding, review of the ICHmw1 is scheduled to begin in 2010.
- Site classification for the ESSFmm1 will be reviewed in conjunction with re-classification in Headwaters District (date unknown).

### *Revelstoke*

- The most recent mapping updates for the Revelstoke portion of DCO were completed in 2001.
- The most significant issue with BEC in Revelstoke is the lack of ESSF woodland mapping, especially in the extensive area that should be mapped as ESSFvcw (see Woodland mapping in Arrow section for a description of woodland issues).
- Work to identify the woodland boundary is underway, using existing data, remote sensing, and modeling; pending funding, additional field sampling is planned for summer 2009 to confirm boundaries and develop a site classification.

## Changes to Boundary portion of DAB

### *Mapping*

- The most recent mapping updates for the Boundary portion of DAB were completed in 2003.
- Major changes included the introduction of the IDFxh4 and separation of the ICHdw2 from the remaining ICHdw1. Although mapped in 2003, site classification for these new units was released in November 2005.
- The MSdm1a was also mapped in 2003 to differentiate areas with extensive cedar within the MSdm1. No site series have been developed for this unit, but interim direction is to use site classification for the ICHmk1 (from LMH 20 – 1992).
- Mapping changes in 2003 also increased the area of ESSFdc1 (and dcw, dcp), particularly to the east, reduced the area of ICHmw2, and eliminated the IDFxh1 (replaced with IDFxh4, which also now includes areas previously mapped as ICHdw and IDFdm1).
- In 2008, the PPdh1 was renamed PPxh3.

### *Site classification*

- Draft new site series have been developed for the following BEC units (Lloyd et al. 2005): PPxh3, IDFdm1, ICHmk1, ICHmw2, MSdm1, ESSFdc1, and are anticipated for release in 2010.
- No new draft units have been developed for the ICHdw2, IDFxh4 (released in 2005), and MSdm1a (interim guidance is to use ICHmk1 site classification for MSdm1a).

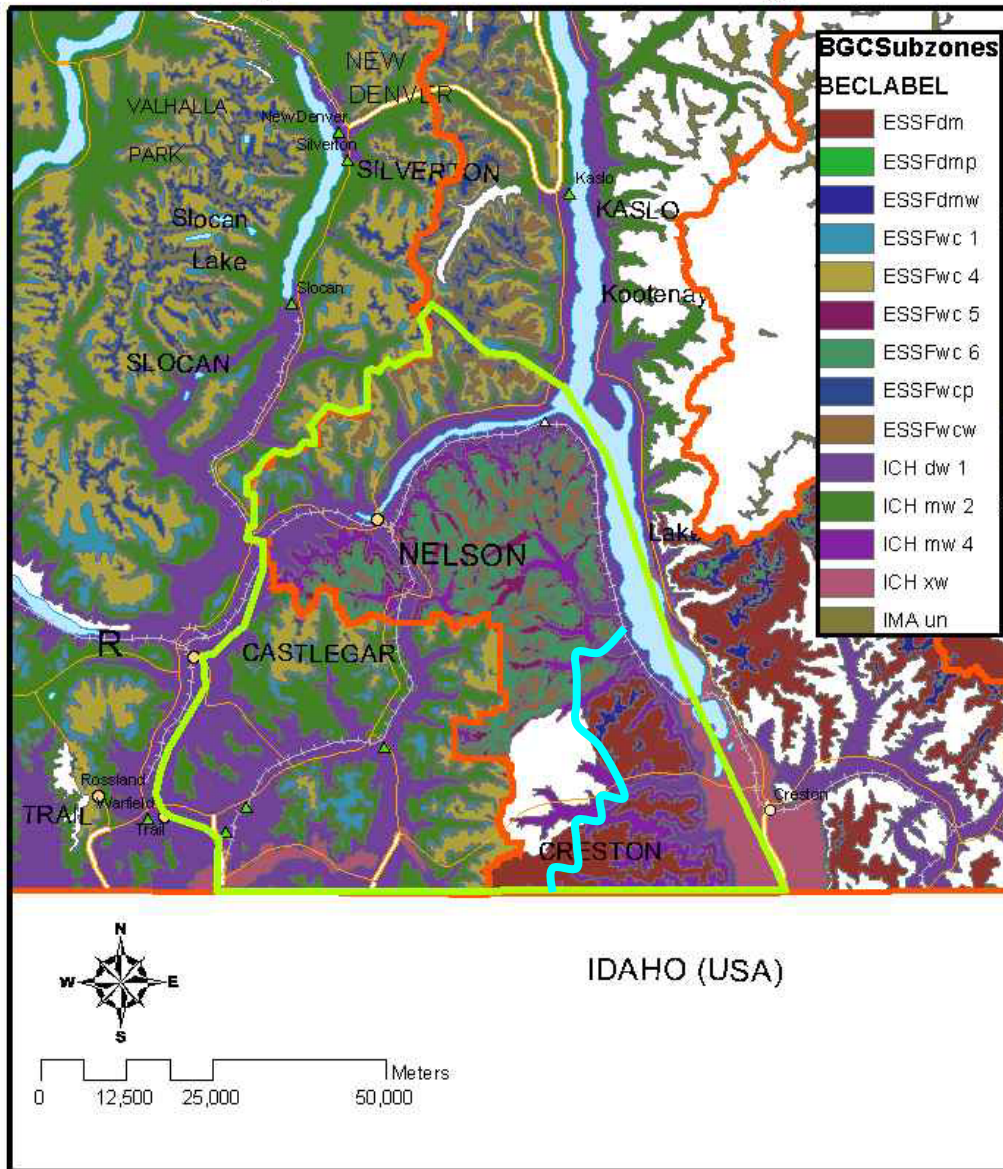
## Some Management Implications

- Changing BEC has important legal and professional implications.
- Some of the business areas affected include Timber Supply Review, FRPA implementation, compliance and enforcement (e.g., stocking standards, free growing), silviculture allowances, waste and breakage, wildlife and biodiversity modeling and planning, sustainable forest management plans.
- The following table provides a summary of some of the important areas affected by BEC; implementation of new BEC site series and mapping will require cooperation between Regional Ecologists (MFR), other government agencies, and licensees.

### Management issues affected by changes to BEC mapping and site classification

Management Issues	Rationale / Explanation
Stocking standards and species selection	Needs re-visiting for default species selection standards and footnotes; new BEC will require a "major amendment without consultation" to address stocking standards in FSPs; new species selection tool (being developed) will have to be linked to new site series
RESULTS database	RESULTS is the dbase that tracks silviculture openings; the dbase will have to be updated to accommodate new BEC units (variants and site series); past changes in BEC have created some confusion/errors in dbase entries, so work will be required to improve communication with licensees and accuracy of entries
SIBEC	SIBEC = site index BEC correlation and is used for estimating productivity in TSR (in conjunction with PEM/TEM mapping); existing data will have to be reassigned to the new site series
PEM/TEM	Old PEM/TEM projects will be out-dated shortly; updates will be required for TSR
NDT	new BGC units will have to be assigned an NDT; existing units may need reassessment
Silviculture allowances	Are linked to BEC; new BEC units will have to be included in silviculture allowance tables; current tables have not been updated since 2001
Waste and Breakage Allowances	Benchmarks (limits) are linked to NDT, which is linked to BEC; updates will be required for new BEC units
CDC / Species and Ecosystem Conservation Framework	Red and blue listings are based on site series and site associations from BEC; the MoE's Conservation Framework will also use BEC as the basis; lists and priorities will need adjusting once new site series are released
Forest Health	Planning (hazard and risk ratings) and modelling are often linked to BEC -forest health concerns also link to species selection, which will be updated with new site series
Higher Level Plans	KBHLPO does not specify legally required BEC version except in Table 2.5 where mature forest requirements and targets are listed by BGC variant; in practice, DRM uses BEC v5(2005) for OGMA budgets, Golden uses 2003 data, while the remaining districts use BEC v4, published in 2001. Updates to BEC should be incorporated into the HLP once completed (anticipated for 2010).
OGMAs	Representation targets are by BEC x Landscape Unit (by BEO), but KBLUP is tied to old BEC (see above)
UWR	Requirements are linked to BEC; in FRPA
Wildlife habitat	Many wildlife habitat models link to BGC and/or site series; may need updating for use with new PEM/TEM
Parks and Protected Areas Strategy	Representation analyses will change since targets are linked to BEC

## Arrow and Kootenay Lake Proposed area of BEC Change



**Figure 1. Current BEC mapping with boundary for proposed mapping changes in the southern portion of Kootenay Lake and Arrow-Boundary Forest Districts. The full extent of proposed BEC changes is shown in the bright green/yellow outline – extension of ICHmw4, ESSFwc5, and ESSFwc6 in to Arrow (south of West Arm) and Kootenay Lake (north of West Arm). The orange line shows the district boundary. ESSF areas to the east of the blue line will be mapped as ESSFdm; areas to the west will be mapped as ESSFwc5 and ESSFwc6. The ESSFwm shows as blank – this unit will be replaced with ESSFwc5 and wc6.**