Species at Risk Act
Recovery Strategy Series

Recovery Strategy for the Yellow-breasted Chat *auricollis* subspecies (*Icteria virens auricollis*) (Southern Mountain population) in Canada

Yellow-breasted Chat *auricollis* subspecies

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For copies of the recovery strategy, or for additional information on species at risk, including the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) Status Reports, residence descriptions, action plans, and other related recovery documents, please visit the Species at Risk (SAR) Public Registry[1].

Cover illustration: Kindrie Grove

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[1] http://www.registrelep-sararegistry.gc.ca

PREFACE

The federal, provincial, and territorial government signatories under the Accord for the Protection of Species at Risk (1996)[2] agreed to establish complementary legislation and programs that provide for effective protection of species at risk throughout Canada. Under the *Species at Risk Act* (S.C. 2002, c.29) (SARA), the federal competent ministers are responsible for the preparation of recovery strategies for listed Extirpated, Endangered, and Threatened species and are required to report on progress within five years after the publication of the final document on the SAR Public Registry.

The Minister of the Environment and Climate Change is the competent minister under SARA for the Yellow-breasted Chat *auricollis* subspecies, Southern Mountain population, and has prepared this strategy, as per section 37 of SARA. To the extent possible, it has been prepared in cooperation with the Government of British Columbia.

Success in the recovery of this species depends on the commitment and cooperation of many different constituencies that will be involved in implementing the directions set out in this strategy and will not be achieved by Environment and Climate Change Canada, or any other jurisdiction alone. All Canadians are invited to join in supporting and implementing this strategy for the benefit of the Yellow-breasted Chat *auricollis* subspecies and Canadian society as a whole.

This recovery strategy will be followed by one or more action plans that will provide information on recovery measures to be taken by Environment and Climate Change Canada and other jurisdictions and/or organizations involved in the conservation of the species. Implementation of this strategy is subject to appropriations, priorities, and budgetary constraints of the participating jurisdictions and organizations.

The recovery strategy sets the strategic direction to arrest or reverse the decline of the species, including identification of critical habitat to the extent possible. It provides all Canadians with information to help take action on species conservation. When critical habitat is identified, either in a recovery strategy or an action plan, there may be future regulatory implications, depending on where the critical habitat is identified. SARA requires that critical habitat identified within a national park named and described in Schedule 1 to the *Canada National Parks Act*, the Rouge National Urban Park established by the *Rouge National Urban Park Act*, a marine protected area under the *Oceans Act*, a migratory bird sanctuary under the *Migratory Birds Convention Act, 1994* or a national wildlife area under the *Canada Wildlife Act* be described in the *Canada Gazette*, after which prohibitions against its destruction will apply. For critical habitat located on other federal lands, the competent minister must either make a statement on existing legal protection or make an order so that the prohibition against destruction of critical habitat applies. For any part of critical habitat located on non-federal lands, if the competent minister forms the opinion that any portion of critical habitat is not protected by provisions in or measures under SARA or other Acts of Parliament, or the laws of the province or territory, SARA requires that the Minister recommend that the Governor in Council make an order to prohibit destruction of critical habitat. The discretion to protect critical habitat on non-federal lands that is not otherwise protected rests with the Governor in Council.

[2] http://registrelep-sararegistry.gc.ca/default.asp?lang=en&n=6B319869-1#2

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Gratitude is due to the many individuals who provided information, advice and comments on the drafts of this strategy and on the biology of the Yellow-breasted Chat. Special thanks to Kindrie Grove for the cover illustration.

EXECUTIVE SUMMARY

The Yellow-breasted Chat is a large wood warbler with a bright yellow throat and breast; white belly; olive green back, wings and tail; and a blue-grey head with conspicuous white "spectacles". Yellow-breasted Chats are neotropical migrants, and are only present in Canada between spring and late summer.

In 2000, the Yellow-breasted Chat *auricollis* subspecies (*Icteria virens auricollis*), Southern Mountain population, was assessed as Endangered by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) due to a low population size and past severe losses of its preferred habitat. An estimated 63-92% of key riparian nesting areas have been lost in the core breeding habitat in the southern Okanagan and Similkameen valleys. The species was listed as Endangered under the *Species at Risk Act* in 2003. Recovery of the Yellow-breasted Chat *auricollis* subspecies is considered to be biologically and technically feasible.

In British Columbia, the Yellow-breasted Chat has been found exclusively in dense riparian thickets and usually nests in wild rose bushes. It is estimated there are approximately 170 breeding pairs of Yellow-breasted Chat in the province.

The primary threat to the species is the loss, degradation, and fragmentation of its habitat through development, roadside vegetation removal, and livestock grazing. Additional threats include accidental death through collisions with vehicles and other objects, nest predation, brood parasitism, disturbance by humans, and pesticides.

The population and distribution objective is to support approximately 200 breeding pairs within the current extent of occurrence of this species in British Columbia.

Broad strategies to be taken to address the threats to the survival and recovery of the species are presented in the section on Strategic Direction for Recovery.

Critical habitat for the Yellow-breasted Chat in British Columbia consists of low-lying riparian habitats. Critical habitat is identified in the Okanagan valley (approximately 371 ha), in the Similkameen valley (approximately 136 ha), and in southeastern British Columbia (approximately 16 ha).

One or more action plans for the Yellow-breasted Chat will be completed by 2020.

RECOVERY FEASIBILITY SUMMARY

Recovery of the Yellow-breasted Chat *auricollis* subspecies (Southern Mountain population) is biologically and technically feasible, based on the following four criteria (Government of Canada 2009):

1. Individuals of the species that are capable of reproduction are available now or in the foreseeable future to sustain the population or improve its abundance. Yes; current best estimates are of approximately 170 breeding pairs in British Columbia.

2. Sufficient suitable habitat is available to support the species, or additional suitable habitat could be made available through habitat management and restoration. Yes; the current population size is supported by sufficient habitat, and additional potential habitat can be managed and/or restored to become suitable for an increased Yellow-breasted Chat population.

3. The primary threats to the species or its habitat (including threats outside of Canada) can be avoided or mitigated. Yes; in Canada, the primary threat is of ongoing loss and degradation of riparian habitat. This can be mitigated through habitat protection and stewardship measures, and habitat restoration efforts.

Habitat loss is also a concern within migration and wintering areas in the United States, Mexico, and Central America, and for adjacent Yellow-breasted Chat populations in the United States. The extent to which threats in those areas can be mitigated is unknown.

4. Recovery techniques exist to achieve the population and distribution objective, or can be expected to be developed within a reasonable timeframe. Yes; recovery techniques are well established, and consist of habitat protection, and habitat restoration and enhancement (e.g. exclusion of cattle from riparian areas, planting of native vegetation, restoration of channelized watercourses).

As the small Canadian population of Yellow-breasted Chat *auricollis* subspecies occurs at the northern part of its continental range, and the vast majority of its continental distribution and population occurs further south in the United States, it is important to note that population changes at the continental level may have a significant effect on the recovery feasibility in Canada. If the continental population of Yellow-breasted Chat *auricollis* subspecies experiences an ongoing downward or upward population trend, its range may expand or contract towards the centre of its range or near the periphery. In these cases, the rate of recovery of the Canadian population, and the rate of achievement of population and distribution goals, may reflect both these continental range changes, and local response to the provision of suitable habitat and mitigation of key threats. At present, there is insufficient data to evaluate trends for Yellow-breasted Chat *auricollis* subspecies.

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1. COSEWIC* SPECIES ASSESSMENT INFORMATION

Date of Assessment: November 2011

Common Name (population): Yellow-breasted Chat *auricollis* subspecies (Southern Mountain population)

Scientific Name: *Icteria virens auricollis*

COSEWIC Status: Endangered

Reason for Designation: This subspecies is a shrub-thicket specialist that occurs at the northern edge of its range in Canada. The small population, which is restricted to the Southern Mountain Ecological Area in British Columbia, is localized to a particular type of riparian habitat. A number of threats have been identified as serious concerns, including cattle tramping of rose thickets, road maintenance and urbanization, agricultural and potential hydro-electric development of the Similkameen River.

Canadian Occurrence: British Columbia

COSEWIC Status History: The Southern Mountain population of the *auricollis* subspecies was designated Threatened in April 1994. Status re-examined and designated Endangered in November 2000 and November 2011.

*Committee on the Status of Endangered Wildlife in Canada

2. SPECIES STATUS INFORMATION

The *auricollis* subspecies (Southern Mountain population) of the Yellow-breasted Chat that is the subject of this recovery strategy has not been ranked globally or nationally by NatureServe (NatureServe 2009). However, it has been provincially ranked (B.C. Conservation Data Centre 2009) and assessed by COSEWIC (Table 1). It is estimated that less than 1% of the global abundance of the *auricollis* subspecies is in Canada (Cannings 2000, Eckerle and Thompson 2001, Rich et al. 2004).

Table 1. List and description of various conservation status ranks for Yellow-breasted Chat *auricollis* subspecies, Southern Mountain population (from NatureServe 2013, British Columbia Conservation Data Centre 2013, and British Columbia Conservation Framework 2013).

Global (G) Rank	National (N) Rank	Canada Status	Sub-national (S) Rank	B.C. Conservation Status
G5TNR	Canada: NNRB	COSEWIC: E (Endangered) SARA: Schedule 1 (Endangered)	British Columbia (S1S2B)	• Red List (B.C. CDC) • Conservation Framework Priority 1 under Goal 3[1] • Species at Risk under the *Forests and Range Practices Act* • Identified Wildlife under the Identified Wildlife Management Strategy

T: Subspecies; NR: Unranked; B: Breeding; G/N/S1: Critically Imperiled; 2: Imperiled; 3: Vulnerable; 4: Apparently Secure; 5: Secure.
B.C. CDC: British Columbia Conservation Data Centre
[1]Goal 3: Maintain the diversity of native species and ecosystems. Priority 1: highest conservation priority. http://www.env.gov.bc.ca/atrisk/help/consFrwk.htm

3. SPECIES INFORMATION

3.1 Species Description

The Yellow-breasted Chat is the largest wood warbler species in North America. There are two recognized subspecies: *Icteria virens virens* in eastern North America and *Icteria virens auricollis* in western North America. The *auricollis* subspecies (hereafter: Yellow-breasted Chats) are approximately 18 cm in length and weigh approximately 25 g. Yellow-breasted Chats have a bright yellow throat and breast; white belly; olive green back, wings and tail; and a blue-grey head with conspicuous white "spectacles". Males are brighter in colour than females. Chats are elusive to human observers, and are most easily detected during the breeding season, when males deliver a loud, distinctive song consisting of a jumble of harsh, chattering clucks and soft caws, alternating with repeated whistles (Eckerle and Thompson 2001). Yellow-breasted Chats are neotropical migrants, and are only present in Canada between spring and late summer.

3.2 Population and Distribution

Globally, the Yellow-breasted Chat (*Icteria virens*) breeds in North America (southern Canada, the United States and northern Mexico), and winters in parts of both North and Central America (Fig. 1). The global population is estimated at 12 million individuals. The western subspecies (*auricollis*) breeds west from the central Great Plains and prairies, from southern Saskatchewan, Alberta and British Columbia, to northern Mexico in the south. This western subspecies winters from northern Mexico and southern Texas in the north, to central Guatemala in the south.

In Canada, the western subspecies (*auricollis*) occurs in two disjunct populations: the prairie population, assessed as not at risk, breeds in southeastern Alberta and southern Saskatchewan; the endangered Southern Mountain population breeds in south-central and southeastern British Columbia (COSEWIC 2000). This strategy focuses on the endangered Southern Mountain population of the Yellow-breasted Chat *auricollis* subspecies.

Figure 1. Breeding and wintering range of both subspecies of Yellow-breasted Chat (modified from: Eckerle and Thompson 2001).

COSEWIC (2011) assessed the Southern Mountain population of the *auricollis* subspecies as endangered, based on very low numbers of mature individuals. Anecdotal reports and inventories during 1992 through 2000 indicated the Southern Mountain Yellow-breasted Chat population was ≤20 pairs (Gibbard and Gibbard 1992; Johnston and Rockwell 2000; R.J. Cannings, pers. comm.).

From 2001-2007, comprehensive annual surveys in the South Okanagan Valley led to British Columbia population estimates of up to 72 pairs (Bishop unpublished data). More recent surveys in 2013 indicate there may be as many as 90-98 pairs in the Okanagan Valley (Bishop unpublished data). In the Similkameen Valley, no comprehensive surveys have been conducted, but sightings from local bird-watchers indicate that Yellow-breasted Chats are present and breeding is probable. In 2010, it was estimated that the number of chats in the Similkameen was similar to that in the South Okanagan (both estimated at 72 pairs), based on the amount of suitable habitat available (Gibbard and Gibbard 1992, Bishop unpublished, British Columbia Ministry of Environment Lands and Parks 1999, Warman and Sarell 1998**)**. However, significant habitat restoration work has been undertaken in the Okanagan in the last decade, allowing more chat territories to be supported; the Similkameen estimate remains at 72 pairs.

A single nest record exists for the Central Okanagan, from Kelowna in 2007 (R. McKibbin, pers. comm). In 2004 and 2005, in southeastern British Columbia, a single nesting pair and an unpaired singing male were detected in the Pend d'Oreille Valley (Machmer and Ogle 2006, Dulisse et al. 2005). This was the first nesting record in British Columbia outside the Okanagan and Similkameen valleys. Annual monitoring from 2006-2010 confirmed a maximum annual number of eight pairs of chats nesting in the Pend d'Oreille Valley (Machmer 2007- 2011). Detailed territory mapping was conducted for one pair of chats nesting in Creston in 2005 (Machmer and Ogle 2006). Over the past 20 years, additional sightings of Yellow-breasted Chats with no confirmed breeding have been reported from elsewhere in the province: Vernon and nearby areas, Kamloops, Cache Creek, Pitt Meadows, Vancouver, and Mission (Campbell et al. 2001), Pavilion and Lillooet (R. J. Cannings, pers. comm.).

While more data on population distribution and connectivity are required, the Southern Mountain population appears to be geographically but not genetically (Mino et al. unpubl. manuscript) subdivided into three discontinuous areas: the Similkameen, the central and south Okanagan, and southeastern British Columbia (Fig. 2). It is estimated that there are approximately 170 breeding pairs in the province.

Research findings from the South Okanagan Valley indicate that the area supports a stable population with a high percentage of returned birds, and is not just "overflow" from the United States (C. Bishop pers. comm.). Adult survivorship in this area is high at 65%. Site fidelity is also high with 31% of adult males returning to the same study site and 10% of colour banded birds fledged there returning to the Okanagan Valley (McKibbin and Bishop 2012a). Surveys conducted by Environment Canada during 2003-2004 in Washington State in riparian areas on the Okanagan River up to 200 km immediately south of British Columbia found very sparse occurrences of Yellow-breasted Chat; although one colour-banded individual from the south Okanagan was seen.

There is little evidence to suggest that the current breeding distribution of Yellow-breasted Chat in British Columbia differs significantly from past distribution at a broad scale (Cannings et. al.1987; Cannings 2000). There are insufficient data to estimate a population trend for British Columbia. However, Yellow-breasted Chats were historically reported to be in almost every riparian area throughout the South Okanagan Valley (Taverner in Cannings et al. 1987); so it is assumed that the population has gone through a dramatic decline in size and occurrence during the last century.

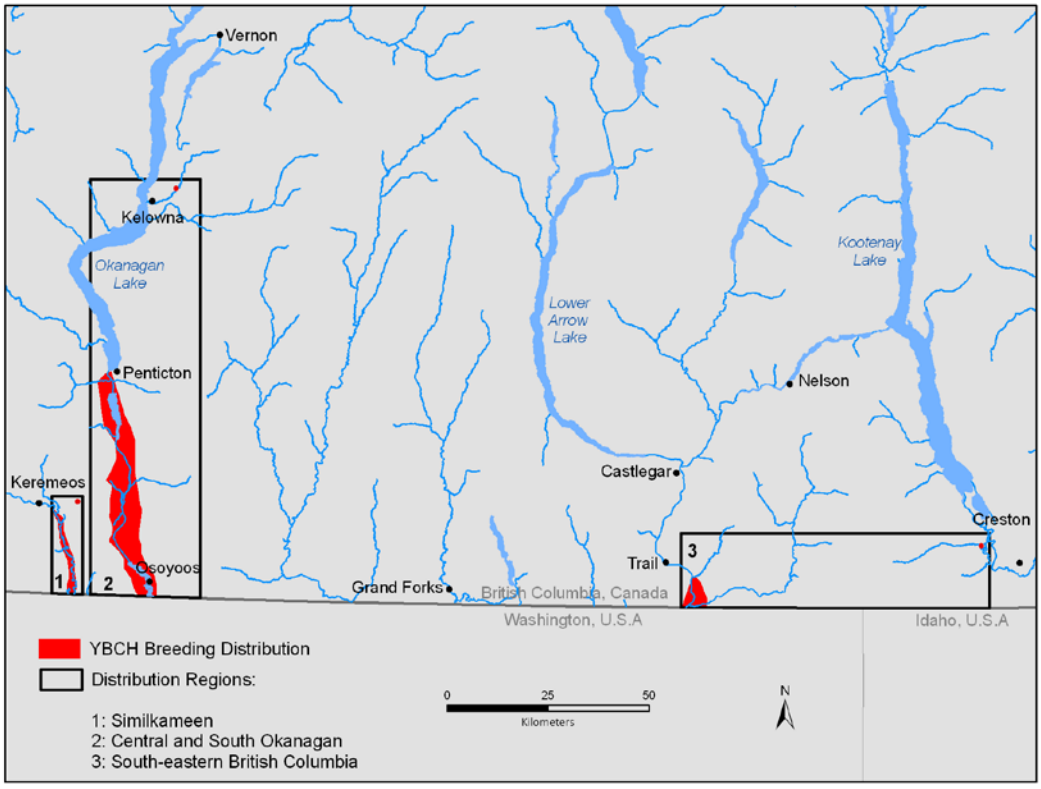

Figure 2. 2013 breeding distribution of Yellow-breasted Chat in British Columbia, Canada. Map prepared by Environment and Climate Change Canada using data from Cannings (2000) and Bishop (unpublished).

3.3 Needs of the Yellow-breasted Chat *auricollis* subspecies

The Yellow-breasted Chat nests semi-colonially in thickets in riparian zones and early successional habitats (Eckerle and Thompson 2001). Yellow-breasted Chats prefer to nest close to territories where others are already established, partly to increase their opportunities for extra pair copulation (Alessi 2010). In British Columbia, the Yellow-breasted Chat is thought to be limited by availability of suitable breeding habitat comprised of dense thickets dominated by Wild Rose (*Rosa* spp.) and other indigenous shrubs with an mid-successional overstory of Water Birch (*Betula occidentalis*) or Black Cottonwood (*Populus trichocarpa*), found along streams, oxbows and other wetlands in low elevation areas (usually <=500m altitude) (Cannings 2000; Morgan et al. 2006; McKibbin and Bishop 2010). Its breeding range is primarily restricted to latitudes south of the city of Kelowna (although only one location is known north of Penticton) in the dry interior regions of the Lower Similkameen and Okanagan Valleys, and extreme southeastern British Columbia.

In the South Okanagan Valley from 2002 to 2007, breeding territory, nest patch, and nest shrub characteristics were measured for Yellow-breasted Chats. Yellow-breasted Chat breeding territories were located in lower elevation riparian zones consisting mainly of dense shrubs and

early successional water-tolerant trees with the dominant shrub species being wild rose. Yellow-breasted Chats show high fidelity both to the South Okanagan Valley and to individual nesting territories there (McKibbin and Bishop 2012a). Yellow-breasted Chats nested in 12 shrub species and 72% of nests were within Wild Rose or Wild Rose intertwined with another species. Based on singing or perching locations of male Yellow-breasted Chats, breeding territories were estimated to be on average 0.37 ha (McKibbin and Bishop 2010). Radio-telemetry studies of this population show the areas used by males were an average of 1.16 ha (McKibbin and Bishop 2012b). These findings indicate that there is a minimum area around the nest which males defend from intrusion by other males but they also forage well beyond the areas they defend. In comparison, in Indiana, U.S.A., territory size for the eastern Yellow-breasted Chat is estimated at 1.2 ha (Thompson and Nolan 1973).

Given the peripheral nature of the Yellow-breasted Chat population in British Columbia, the long-term viability of the population may also be dependent on the breeding success and immigration of birds in adjoining portions of the range in Washington State (Tischendorf 2003; Carr and Tischendorf 2004), where loss and degradation of riparian habitat has also occurred.

There is no information available on migration and wintering habitat specific to this population although a color-banded chat from the south Okanagan was recovered in 2007 in Nevada, U.S.A. (Environment and Climate Change Canada, unpublished data). Overwintering range for Yellow-breasted Chats is described as areas of southern U.S.A. and Mexico (Fig. 1).

Yellow-breasted Chats generally use a similar type of low, dense vegetation as that used on breeding grounds during spring and fall migration and on wintering grounds (Eckerle and Thompson 2001). Wintering habitat includes shrub-steppe with dense, low cover of woody vegetation, savanna or pasture with scattered clumps of trees; scrub and pine-savanna with dense patches of shrubs; riparian gallery forest, mangrove, and disturbed tropical evergreen forest (Eckerle and Thompson 2001). Recent studies indicate that habitat quality, as defined by abundance of food on wintering grounds, can significantly influence the productivity of migrant warblers (Yellow-breasted Chat is a warbler species) on their return to breeding sites in Canada (Norris et al. 2003). This further supports earlier studies that indicate that the quality and quantity of habitat within both North and Central America are important for the overall productivity and survival of migratory warblers (Marra et al. 1998).

4. THREATS

4.1 Threat Assessment

Table 2. Threat Assessment Table

Threat	Level of Concern[1]	Extent	Occurrence	Frequency	Severity[2]	Causal Certainty[3]
Habitat loss, degradation, and fragmentation						
Development	High	Widespread	Historic, current	Continuous	High	High
Roadside and right of way vegetation management	High	Widespread	Historic, current	Continuous	High	High
Livestock grazing	High	Widespread	Historic, current	Continuous	High	High
Accidental mortality						
Collisions with anthropogenic objects	Low	Localized	Current	Recurrent	Low	High
Changes in ecological dynamics or natural processes						
Nest predation	Low	Widespread	Current	Continuous	Low	Medium
Brown-headed Cowbird brood parasitism	Low	Widespread	Current	Continuous	Low	Medium
Climate Change	Low	Widespread	Current, anticipated	Continuous	Unknown	Unknown
Disturbance and persecution						
Recreational activities	Low	Localized	Anticipated	Recurrent	Low	Low
Pollution						
Pesticide use	Low	Localized	Historic, current	Recurrent	Low	Low

[1] *Level of Concern: signifies that managing the threat is of (high, medium or low) concern for the recovery of the species, consistent with the population and distribution objectives. This criterion considers the assessment of all the information in the table.*

[2] *Severity: reflects the population-level effect (High: very large population-level effect, Moderate, Low, Unknown).*

[3] *Causal certainty: reflects the degree of evidence that is known for the threat (High: available evidence strongly links the threat to stresses on population viability; Medium: there is a correlation between the threat and population viability e.g. expert opinion; Low: the threat is assumed or plausible).*

4.2 Description of Threats

Only threats listed as having high or moderate levels of concern in Table 2 are described in this section.

Habitat Loss, Degradation and Fragmentation

Development

Urban, agricultural development in riparian areas has led to severe loss and degradation of breeding habitat in the Okanagan and Similkameen Valleys (Austin et al. 2008, Lea 2008). Combined losses in those valleys of key Yellow-breasted Chat nesting areas such as Black Cottonwood-Water Birch habitat is estimated at 63% and, for Water Birch-Rose, habitat loss is estimated at 92% (Austin et al. 2008). Removal of riparian habitat for urban and agricultural expansion on private and Indian Reserve land continues to threaten the remaining Yellow-breasted Chat habitat in British Columbia.

Project footprints from industrial development and their related construction have removed, fragmented, and degraded breeding is of particular concern at one of the sites in the Columbia River area (M. Machmer, pers. comm.). Additionally, continuous vegetation management, such as brushing, pruning, and mowing occurs along the associated transmission lines, access roads, and other rights-of-ways also degrades or destroys Yellow-breasted Chat habitat and allows invasive plants to spread.

Roadside and Right of Way Vegetation Management

Maintenance standards for the highways that are adjacent to known breeding sites in the South Okanagan and southeastern British Columbia and to suitable habitat in the Similkameen require mechanical brush removal to be conducted up to 7 m from the road edge when vegetation height exceeds 3 m (British Columbia Ministry of Transportation 2003). At one site in the south Okanagan, shrubs previously used by Yellow-breasted Chats for nesting were destroyed by roadside mowing (R. McKibbin, pers. comm.). The management of other linear corridors and rights of way have similar destructive impacts on Yellow-breasted Chat habitat (see the above '*Development*' threat description*).*

Livestock Grazing

Livestock grazing can decrease the size and density of understory riparian vegetation, making riparian habitat unusable for a wide range of riparian obligate bird species. The direct clearing vegetation for livestock grazing removes native habitat and also allows invasive species, such as black locust (*Robinia pseudoacacia*), to spread and further degrade the habitat (M. Machmer, pers. comm.). Cattle in riparian zones in the southern Okanagan have destroyed and fragmented Wild Rose nesting patches (Environment and Climate Change Canada, unpublished). However, spatial and temporal limitation of cattle grazing within Yellow-breasted Chat nesting areas on provincial Crown land, specifically the South Okanagan Wildlife Management Area, appears to

have contributed to an increase from 4 to 20 breeding territories in 7 years (Environment and Climate Change Canada, unpublished). In southeastern British Columbia, livestock grazing (involving trespass of cows onto adjacent private land) led to the trampling and failure of at least one active nest with three eggs in 2006 and the trampling of nest patch shrubs in at least two additional territories (Machmer 2007).

Fragmentation of nesting habitat, resulting from any of the aforementioned activities, may reduce productivity of Yellow-breasted Chats in British Columbia. Yellow-breasted Chats breeding in small habitat patches (<2 ha) fledged fewer chicks (1.57 vs. 2.08) compared to those in larger patches (15-70 ha; Morgan et al. 2007). Although this difference was not statistically different, likely due to small sample sizes, it could be a biologically significant difference given that population models were very sensitive to changes of this magnitude in productivity (Tischendorf 2003; Carr and Tischendorf 2004; Carr 2010).

5. POPULATION AND DISTRIBUTION OBJECTIVES

The population and distribution objective is **to support a population of approximately 200 breeding pairs within the current extent of occurrence of this species in British Columbia.**

The objective is based on a spatially explicit population viability analysis (PVA) for the Okanagan Valley using a habitat suitability model (Carr 2010). A scenario including all currently suitable habitat in the south and central Okanagan (1299 ha) produced extinction risks <5%, whereas a scenario involving only currently occupied sites produced extinction risks >5%. When modelled over 50 years, and maintaining an average productivity of 3.7 chicks per nest, the 1299 ha supports an average of 93 pairs (Carr 2010). There is no comparable data on which to base a PVA in the Similkameen area; however, based on habitat suitability mapping, it is estimated that the Similkameen could support a breeding population equal in size to the Okanagan population (Gibbard and Gibbard 1992, Warman and Sarell 1998, British Columbia Ministry of Environment Lands and Parks 1999, C. Bishop pers. comm.). Therefore, the population and distribution objective is 93 pairs in the south Okanagan valley, 93 pairs in the Similkameen valley and at least 8 pairs in southeastern British Columbia, totalling 194 breeding pairs in British Columbia. This is rounded to approximately 200 pairs.

6. BROAD STRATEGIES AND GENERAL APPROACHES TO MEET OBJECTIVES

6.1 Actions Already Completed or Currently Underway

Restoration, stewardship, and protection of habitat:

- 63.5 ha of occupied or suitable habitat receive some level of protection (5.8 ha within the Vaseux-Bighorn National Wildlife Area [NWA]; 38.2 ha in Wildlife Habitat Areas (*Forest and Range Practices Act*); 2 ha in Inkaneep Provincial Park (*Park Act*); and 17.5 ha in Penticton Indian Band Locatee lands under a lease agreement with

Environment and Climate Change Canada, The Land Conservancy of B.C. [TLC], and the En'owkin Centre.

- 3 ha of potentially suitable habitat have been restored within the Vaseux Bighorn NWA, and plans are in place for restoration of an additional 13 ha.
- Conservation of chat habitat has been increased through conservation partnerships and local stewardship initiatives with the British Columbia Ministry of Environment, TLC, The Nature Trust of B.C., Osoyoos Indian Band, En'owkin Centre, Penticton Indian Band, Lower Similkameen Indian Band, Ducks Unlimited Canada, Nature Conservancy Canada, and ranchers and other landowners in the region.
- Land tenure has been determined and landowner contacts have been initiated for key lands on which occupied and highly suitable chat habitat exists.
- Yellow-breasted Chat has been included in several larger scale conservation plans and associated land management activities including environmental assessments.
- A communications plan for Yellow-breasted Chat is currently being developed.

Research, inventory, and monitoring:

- Surveys to determine the geographic distribution, demography, return rates and site fidelity and habitat needs of Yellow-breasted Chat in British Columbia began in the southern Okanagan Valley in 2000 and continue to target all suitable or potentially suitable habitat. Research, inventory, and monitoring efforts need to be expanded into the lower Similkameen Valley and southeastern British Columbia.
- A population viability and critical habitat analysis using Yellow-breasted Chat population demography and habitat use data has been conducted for the southern Okanagan population.
- Collaborative research is underway between Environment and Climate Change Canada – Science and Technology Branch and the University of Manitoba to evaluate the relationships between habitat quality and Yellow-breasted Chat productivity in British Columbia and any additional factors that influence Yellow-breasted Chat productivity.

Collaboration with international partners:

- Contact has been made with potential conservation partners in Washington State (e.g., Colville Indian Band/USA; Partners in Flight; Okanogan Similkameen Conservation Corridor Project).
- Collaborative research is underway with Simon Fraser University to determine Yellow-breasted Chat *auricollis* subspecies breeding occurrence in Mexico

6.2 Strategic Direction for Recovery

Table 3. Recovery Planning Table

Threat or Limitation	Priority	Broad Strategy to Recovery	General Description of Research and Management Approaches
Development, Roadside vegetation removal, Livestock grazing, Recreational activities, Pesticide Use	Urgent	Restore, steward, and protect habitat	• Identify, restore where necessary, and protect 2550.5 ha[3] of suitable habitat, at elevations of 500 m or less, in the south Okanagan and Similkameen valleys and southeastern BC. • Facilitate securement and stewardship of occupied, suitable, and restorable habitat through a variety of mechanisms including: purchase of land by conservation organizations, conservation covenants, binding stewardship agreements, establishment of protected areas, bylaws, etc. • Develop Best Management Practices to address threats, identify tolerable levels of disturbance, and encourage the integration of BMPs into land management plans such as Official Community Plans, Biodiversity Conservation Strategies, and First Nation land use plans. Integrate into regional conservation programs such as the South Okanagan Similkameen Conservation Program.
Lack of information on demography and population dynamics / connectivity for all sub-populations	Necessary	Research, inventory, and monitoring	• Demographic and threats research and monitoring: For each sub-population, monitor and, where necessary, also conduct research on: population size, breeding territory size, nest locations, site fidelity, productivity, parasitism and predation rates, vegetation characteristics of territories and nest patches, and population recovery/expansion rates. • Population Viability Analysis: In 2015, and as required thereafter, update Okanagan PVA and targets for habitat conservation and restoration; and complete the same for the Similkameen valley, incorporating im/emigration data. If the population size warrants it, conduct same for southeastern British Columbia. Correlate habitat and demographic research and PVA to update the population and distribution objective based on any new biological information. • Evaluate quality of habitat in the context of variation in Yellow-breasted Chat productivity within the three areas for chat (south Okanagan, Similkameen, southeastern British Columbia) and determine any other factors confounding the relationship between habitat quality and Yellow-breasted Chat productivity (e.g. age of birds; site fidelity etc).

[3] 2550.5 ha = 2614 ha habitat protection requirement derived from the population and distribution objective (1299 ha in the Okanagan + 1299 ha in the Similkameen + 16 ha in southeastern British Columbia) minus the 63.5 ha already protected.

Threat or Limitation	Priority	Broad Strategy to Recovery	General Description of Research and Management Approaches
Threats on the overwintering grounds or along migration routes Lack of information about breeding ecology on wintering grounds. Climate change	Necessary	Collaborate with international partners.	• Develop a collaborative strategy for identifying and protecting habitats with conservation partners in Canada, the United States, Mexico and Central America through Joint Ventures. • Determine if Yellow-breasted Chats *auricollis* subspecies are breeding on wintering grounds. This is relevant to productivity measures used in population viability analysis. PVA is highly sensitive to productivity fluctuations which might occur if some individuals remain there in some years but not all years. • Evaluate the quality of habitat utilized on over-wintering grounds and determine how this may influence productivity in British Columbia. • Assess the projected influence of climate change on the distribution of suitable habitat and chat demographics, including productivity.

7. CRITICAL HABITAT IDENTIFICATION

7.1 Identification of the Species' Critical Habitat

The federal *Species at Risk Act* defines critical habitat as "the habitat that is necessary for the survival or recovery of a listed wildlife species and that is identified as the species' critical habitat in the recovery strategy or in an action plan for the species." In this document, the benchmark for survival and recovery is outlined in the population and distribution objective (Section 5).

As mentioned in Section 3.2 (Population and Distribution), the population of Yellow-breasted Chat in British Columbia is divided into three distinct areas. This section will address critical habitat overall and the methodology used to identify that habitat, and then relate that to each of the three areas individually.

Overall Critical Habitat

To meet the population and distribution objective of supporting approximately 200 pairs of Yellow-breasted Chats within the current extent of occurrence, it is anticipated that approximately 2614 ha of suitable habitat is required (1299 ha in the South and Central Okanagan Valley, 1299 ha in the Similkameen Valley, and 16 ha in southeastern British Columbia).

The amount of critical habitat identified in this recovery strategy totals approximately 524 ha (371 ha + 136 ha + 16 ha), and is therefore less than what is required. As such, this constitutes only partial identification, and additional critical habitat must be identified through a Schedule of Studies in order to meet the population and distribution objective.

Methodology

The 1299 ha for the 93 pairs in the Okanagan and Similkameen Valleys is based on a PVA that incorporates density-dependence and small patch colonization/extinction dynamics across the highly fragmented riparian habitat of the Okanagan Valley. Some patches have densities as high as 1 pair / ha, whereas others have lower densities or remain unoccupied. Over the entire Okanagan Valley, given the spatial arrangement of the current riparian habitat, 93 pairs can be supported over the long term.

Alternatively, the 16 ha currently identified in southeastern British Columbia is a delineation of known occupied habitat within a small, regularly surveyed area. It does not consider potential population persistence given the spatial arrangement of riparian habitat in the area. Any perceived discrepancy in apparent densities between the two areas is due to these differences.

Critical habitat is identified to the extent possible using the best available information. In the case of this species, the best available information varies amongst the different geographic areas, and the approach to identification is affected accordingly.

Depending on the information available, critical habitat is defined as (A) *Confirmed Occupied Habitat*, (B) *Suitable Habitat* based on terrestrial ecosystem mapping (TEM) that is outside of areas with confirmed occupancy, or both. The following are the criteria used for each of these categories:

A) Confirmed Occupied Habitat:

Yellow-breasted Chat breeding habitat is characterized by the presence of dense thickets of understory vegetation in mid-successional habitat located in low-lying (<=500m altitude) riparian zones. Refer to Section 3.3 for a more detailed habitat description.

Occupied breeding habitat is confirmed at locations defended by Yellow-breasted Chats at least once since 2001. Delineation of breeding territories is supported by, at minimum, a confirmed nest record or multiple mapped perch locations of a bird defending a territory. Non-breeding observations of Yellow-breasted Chats are excluded from delineation of breeding habitat. Breeding territories in the south Okanagan Valley were found to have the following characteristics, based on visual estimates of percent cover within 50 m radius plots (shrubs and trees) and 11.3 m radius plots (forbs/grasses) centred on nests (McKibbin and Bishop 2010):

- The most predominant nest shrub is Wild Rose (*Rosa* ssp. cover = 30% +/- SD 20% within breeding territories). Common Snowberry (*Symphiocarpus albus*), Red-osier Dogwood (*Cornus stolonifera*), Thistle (*Cirsium spp.*), Saskatoon (*Amelanchier alnifolia*), or Poison Ivy (*Rhus radicans*) are also used for nesting but at lower frequency; they are not always present within breeding territories. Average shrub cover (all species) within breeding territories is 48 +/- 18%.

- Trees (31 +/- 20% cover within breeding territories) are present and include Black Cottonwood, Water Birch, Willow (*Salix ssp*.), or Mountain Alder (*Alnus tenuifolia*).

- Grass and forbs (20 +/- 15% cover within an 11.3 m radius of nests) are always present.

B) Suitable Habitat:

Suitable habitat outside of the areas with confirmed occupancy was defined as any TEM polygon that had ≥50% representation of one of three site series (vegetation communities) associated with Yellow-breasted Chat occupancy. The three sites series were:

- Floodplains with a Black Cottonwood overstory and shrubby understory. Shrubs may include Red-osier Dogwood, Wild Rose, Poison Ivy, Common Snowberry, Water Birch, or Mountain Alder.

- Moist gullies and floodplains with a Trembling Aspen (*Populus tremuloides*) overstory and shrubby understory. Shrubs may include Wild Rose, Common Snowberry, Saskatoon, Red-osier Dogwood, or Poison Ivy.

- Swampy areas characterized by Water Birch and Red-osier Dogwood. Additional shrub species may include wild rose, Poison Ivy, Willow, or Mountain Alder (Iverson and Haney 2009).

It is recognized that, due to the scale of TEM mapping, not all habitat within these vegetation communities is of the correct composition required to form breeding territories. Therefore, within the identified vegetation communities, only areas large enough to contain a Yellow-breasted Chat territory (i.e., >1 ha) and containing the vegetation characteristics of breeding territories (see A - Confirmed occupied habitat) are considered to be critical habitat.

Resulting identification of critical habitat

The areas containing critical habitat for Yellow-breasted Chat are presented in Appendix B.

Critical habitat for Yellow-breasted Chat in Canada occurs within the shaded yellow polygons shown on each map where the critical habitat criteria and methodology described in this section are met.

1) Central and South Okanagan Valley:

Critical habitat in the Okanagan Valley is comprised of both confirmed occupied habitat and TEM-based suitable habitat outside of the areas with confirmed occupancy. Occupied habitat alone makes up the critical habitat in the Central Okanagan. The additional TEM-based suitable habitat is included for the South Okanagan only; this accounts for the fact that less than 1299 ha (target based on suitability mapping in the entire Okanagan Valley) is identified here. Although the suitable habitat has not been documented as occupied, it is necessary to meet the population and distribution objectives in the future. The area containing critical habitat in the Central and South Okanagan is approximately 371 ha.

Within portions of the South Okanagan Valley, critical habitat has not been identified at this time. Environment and Climate Change Canada will work with the applicable organizations to complete the identification of critical habitat on those lands (see section 7.2 *Schedule of Studies*).

2) Similkameen Valley:

Critical habitat in the Similkameen Valley is comprised mainly of suitable habitat (without confirmed occupancy). There is a strong likelihood that some of the suitable habitat in the Similkameen is occupied, but detailed occurrence data for the Yellow-breasted Chat in the Similkameen Valley is currently unavailable. Although this suitable habitat has not been documented as occupied, it is necessary to meet the population and distribution objectives. The area containing critical habitat in the Similkameen Valley is approximately 136 ha.

Within portions of the Similkameen Valley, critical habitat has not been identified at this time. Environment and Climate Change Canada will work with the applicable organizations to complete the identification of critical habitat on those lands (see section 7.2 *Schedule of Studies*).

3) Southeastern British Columbia

Critical habitat in southeastern British Columbia is comprised solely of confirmed occupied habitat (Environment and Climate Change Canada/Machmer, unpublished 2010). There are approximately 15 ha of occupied habitat (seven territories); south of Trail along the Columbia River, and east along the Pend d'Oreille River. There is an additional 1 ha of occupied habitat (one territory) located west of Creston, in the Kootenay River Valley. The identification of these 16 ha of critical habitat is intended to support the eight known pairs in Southeastern British Columbia.

7.2 Schedule of Studies to Identify Additional Critical Habitat

To meet the population and distribution objectives of supporting approximately 200 pairs of Yellow-breasted Chats, it is estimated that 2614 ha of suitable habitat is required. Because the currently identified critical habitat is less than 2614 ha, additional critical habitat must be identified in the future.

Table 4. Schedule of Studies

Description of Activity	Outcome/Rationale	Timeline
Use more detailed GIS mapping and associated ground-truthing to identify additional suitable habitat in the South Okanagan and Similkameen Valleys, and in southeastern British Columbia.	Critical habitat that is sufficient to support the population and distribution objectives is identified	2016-2020
Work cooperatively with applicable organizations to complete the identification of critical habitat in the South Okanagan and Similkameen Valleys.		

7.3 Activities Likely to Result in the Destruction of Critical Habitat

Destruction of critical habitat will be determined on a case by case basis. Destruction would result if part of the critical habitat were degraded, either permanently or temporarily, such that it would not serve its function when needed by the species. Destruction may result from a single or multiple activities at one point in time or from the cumulative effects of one or more activities over time.

Yellow-breasted Chats require dense thickets of shrubs within riparian areas for nesting, foraging, and escape cover (see section 3.3). Therefore, Yellow-breasted Chat critical habitat is likely to be destroyed by any activity that results in the removal of the dense thickets of riparian shrubs.

Activities that are likely to result in destruction of critical habitat through the removal of shrub thickets, include, but are not limited to:

- Brush cutting, excavation, burning, or clearing of land for agricultural or urban development, or transmission infrastructure development or maintenance
- Livestock grazing
- Construction of roads and access trails through shrub thickets
- Alteration of the hydrological regime such that riparian habitat is eliminated
- Herbicide spraying

8. MEASURING PROGRESS

The performance indicators presented below provide a way to define and measure progress toward achieving the population and distribution objectives. Specific progress towards implementing the recovery strategy will be measured against indicators outlined in subsequent action plans.

- Have the breeding populations of Yellow-breasted Chats in the Okanagan and Similkameen Valleys each increased to 93 or more pairs?
- Has the breeding population in southeastern British Columbia been maintained at 8 or more pairs?

9. STATEMENT ON ACTION PLANS

One or more action plans will be completed by 2020.

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11. PERSONAL COMMUNICATIONS

Bishop, Christine. *Research Scientist*, Environment and Climate Change Canada – Science and Technology Branch.

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Machmer, Marlene. *Environmental Consultant*, Pandion Ecological Consulting.

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APPENDIX A: EFFECTS ON THE ENVIRONMENT AND OTHER SPECIES

A strategic environmental assessment (SEA) is conducted on all SARA recovery planning documents, in accordance with the *Cabinet Directive on the Environmental Assessment of Policy, Plan and Program Proposals*[4]. The purpose of a SEA is to incorporate environmental considerations into the development of public policies, plans, and program proposals to support environmentally sound decision-making.

Recovery planning is intended to benefit species at risk and biodiversity in general. However, it is recognized that strategies may also inadvertently lead to environmental effects beyond the intended benefits. The planning process based on national guidelines directly incorporates consideration of all environmental effects, with a particular focus on possible impacts upon non-target species or habitats. The results of the SEA are incorporated directly into the strategy itself, but are also summarized below in this statement.

This recovery strategy will clearly benefit the environment by promoting the recovery of the Yellow-breasted Chat *auricollis* subspecies (Southern Mountain population). The potential for the strategy to inadvertently lead to adverse effects on other species was considered. The SEA concluded that this strategy will clearly benefit the environment and not entail any significant adverse effects.

Restoration of habitat for the Southern Mountain population of Yellow-breasted Chat is expected to result in a net benefit for many other riparian-obligate species. Enhancement of quantity and quality of riparian habitat will benefit water quality for humans, wildlife and livestock and fisheries habitat as well as provide habitat for the 85% of all vertebrate species in Interior of British Columbia that are known to use riparian areas at some point in their lifecycle. The likelihood of this benefit occurring is highly probable, but the significance is unknown in terms of population effects.

Specifically, many native riparian bird species would benefit from chat habitat restoration efforts, including some that regularly use rose thickets such as: Gray Catbird (*Dumetella carolinensis*), Yellow Warbler (*Dendroica petechia*), Willow Flycatcher (*Empidonax traillii*) and Black-headed Grosbeak (*Pheucticus melanocephalus*). Two SARA-listed bird species that would benefit from restored riparian habitat in the region are the Lewis's Woodpecker (*Melanerpes lewis*) and the Western Screech-owl *macfarlanei* subspecies (*Otus kennicottii macfarlanei*). Introduced bird species expected to benefit include: European Starling (*Sturnus vulgaris*), California Quail (*Callipepla californica*) and Ring-necked Pheasant (*Phasianus colchicus*).

Expected increases in Yellow-breasted Chat productivity as a result of recovery efforts is likely to provide an increased source of prey. Native predators that may benefit include snakes, small mammals, owls and corvids. Non-native predators that may benefit include Eastern fox squirrel (*Sciurus niger*) and feral domestic cats (*Felis silvestris*). The Brown-headed Cowbird (*Molothrus ater)* may benefit from an increased chat population; but may also be less effective in finding chat nests to parasitize if chat habitat restoration efforts are successful in improving nest site cover.

[4] http://www.ceaa.gc.ca/default.asp?lang=En&n=B3186435-1

APPENDIX B: CRITICAL HABITAT OVERVIEW MAPS

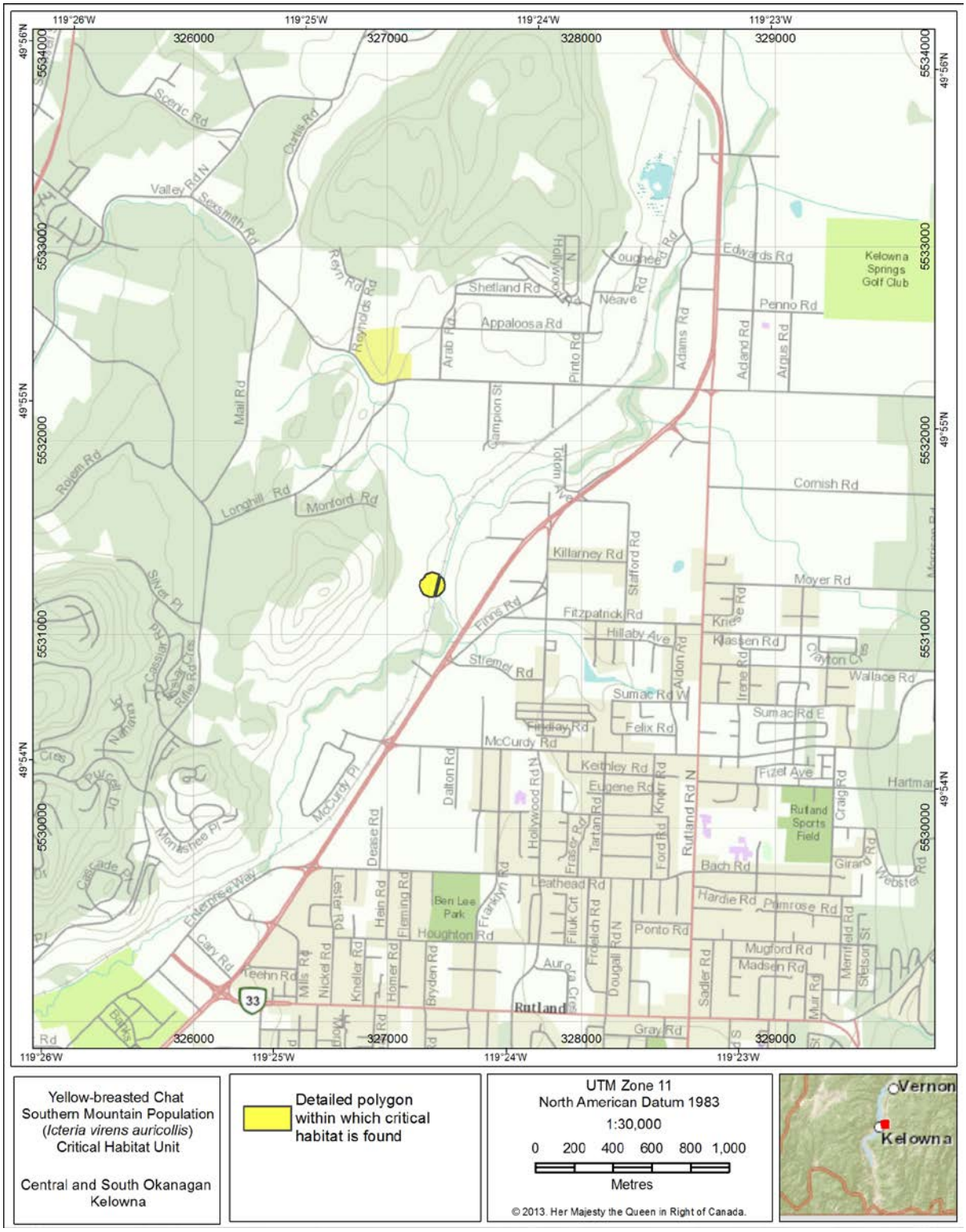

Figure AB1: Critical habitat for the Yellow-breasted Chat *auricollis* subspecies (Southern Mountain population) at Kelowna, B.C. is represented by the yellow shaded units where the criteria and methodology set out in section 7.1 are met.

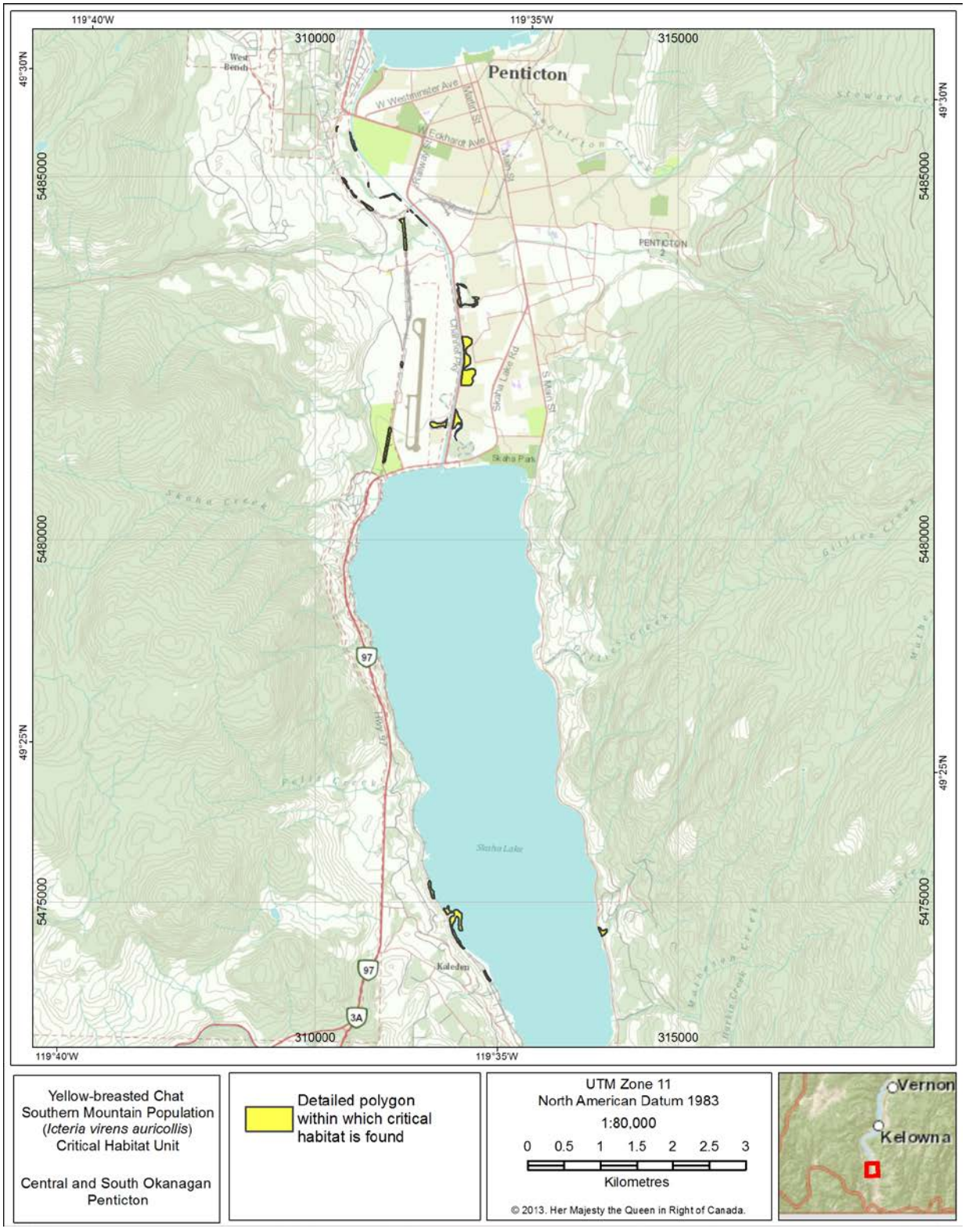

Figure AB2: Critical habitat for the Yellow-breasted Chat *auricollis* subspecies (Southern Mountain population) at Penticton, B.C. is represented by the yellow shaded units where the criteria and methodology set out in section 7.1 are met.

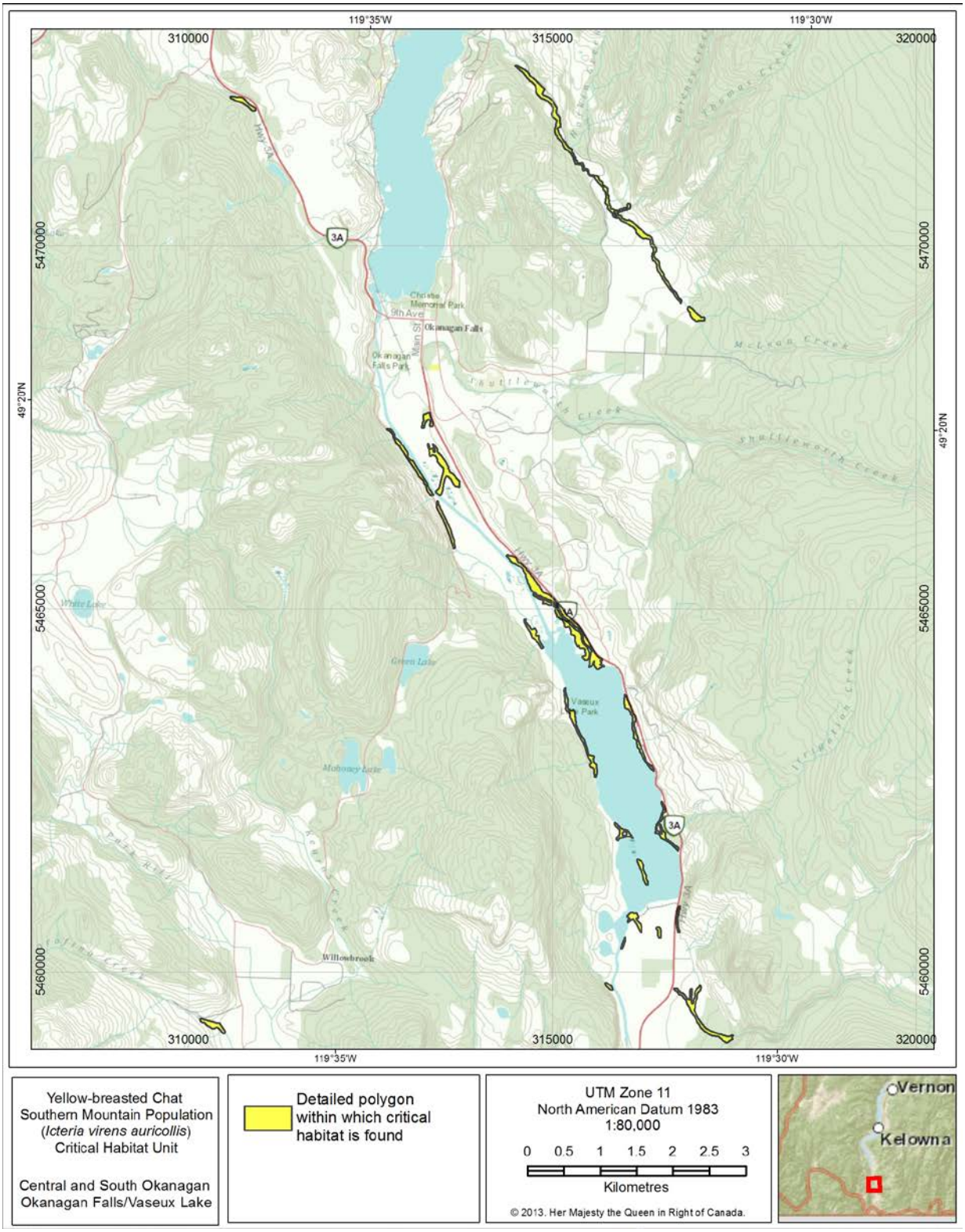

Figure AB3: Critical habitat for the Yellow-breasted Chat *auricollis* subspecies (Southern Mountain population) at Okanagan Falls/Vaseux Lake, B.C. is represented by the yellow shaded units where the criteria and methodology set out in section 7.1 are met.

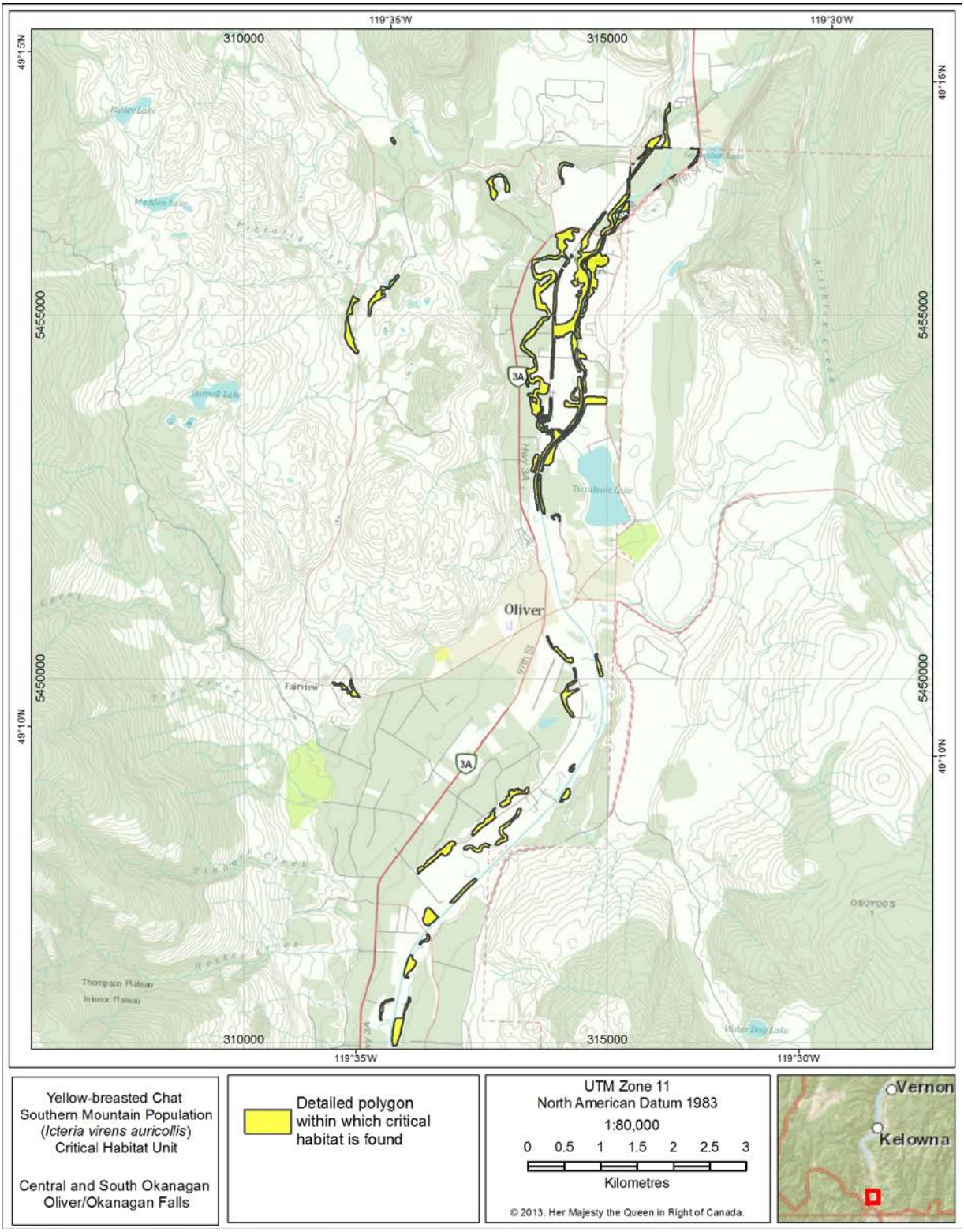

Figure AB4: Critical habitat for the Yellow-breasted Chat *auricollis* subspecies (Southern Mountain population) at Oliver/Okanagan Falls, B.C. is represented by the yellow shaded units where the criteria and methodology set out in section 7.1 are met.

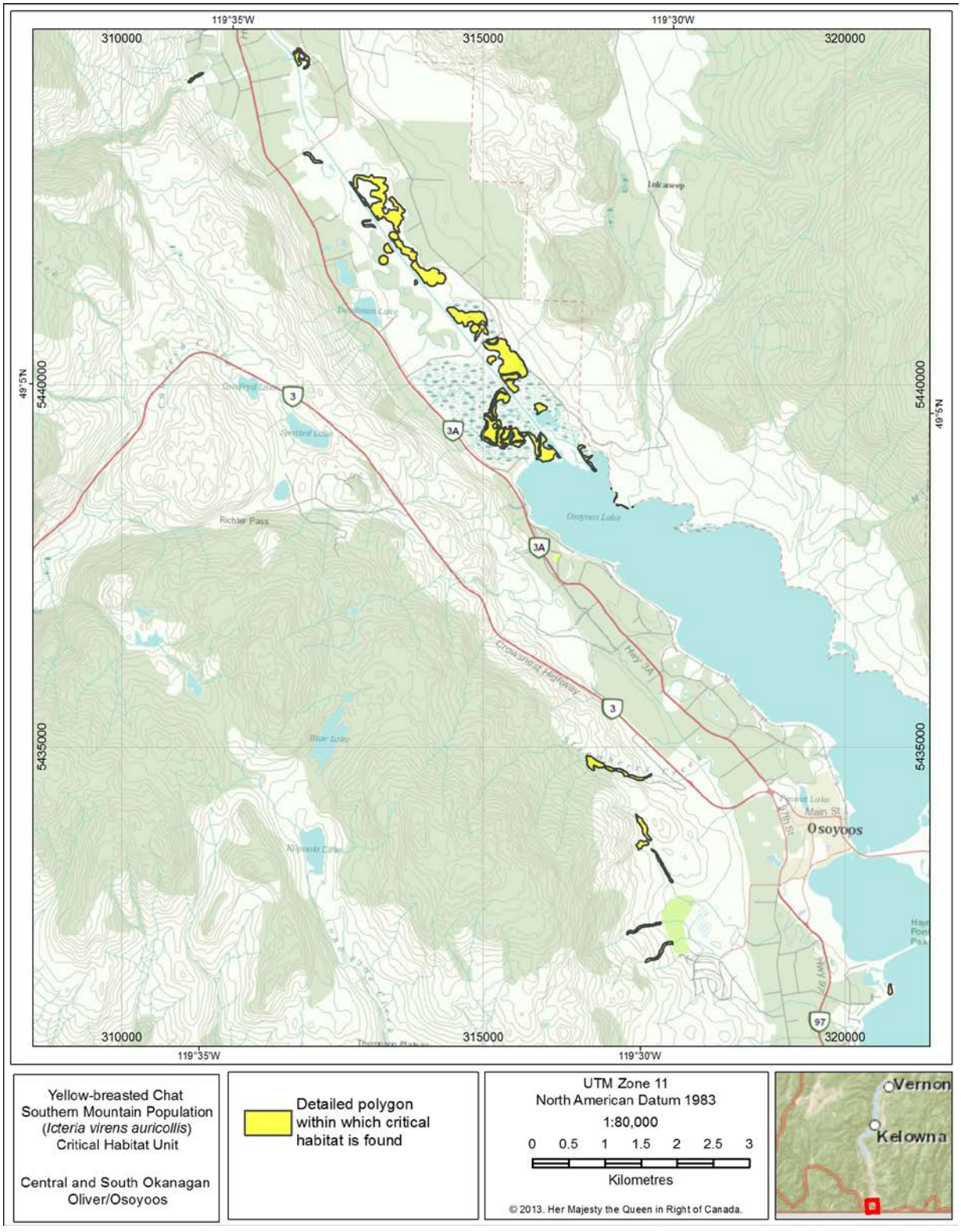

Figure AB5: Critical habitat for the Yellow-breasted Chat *auricollis* subspecies (Southern Mountain population) at Oliver/Osoyoos, B.C. is represented by the yellow shaded units where the criteria and methodology set out in section 7.1 are met.

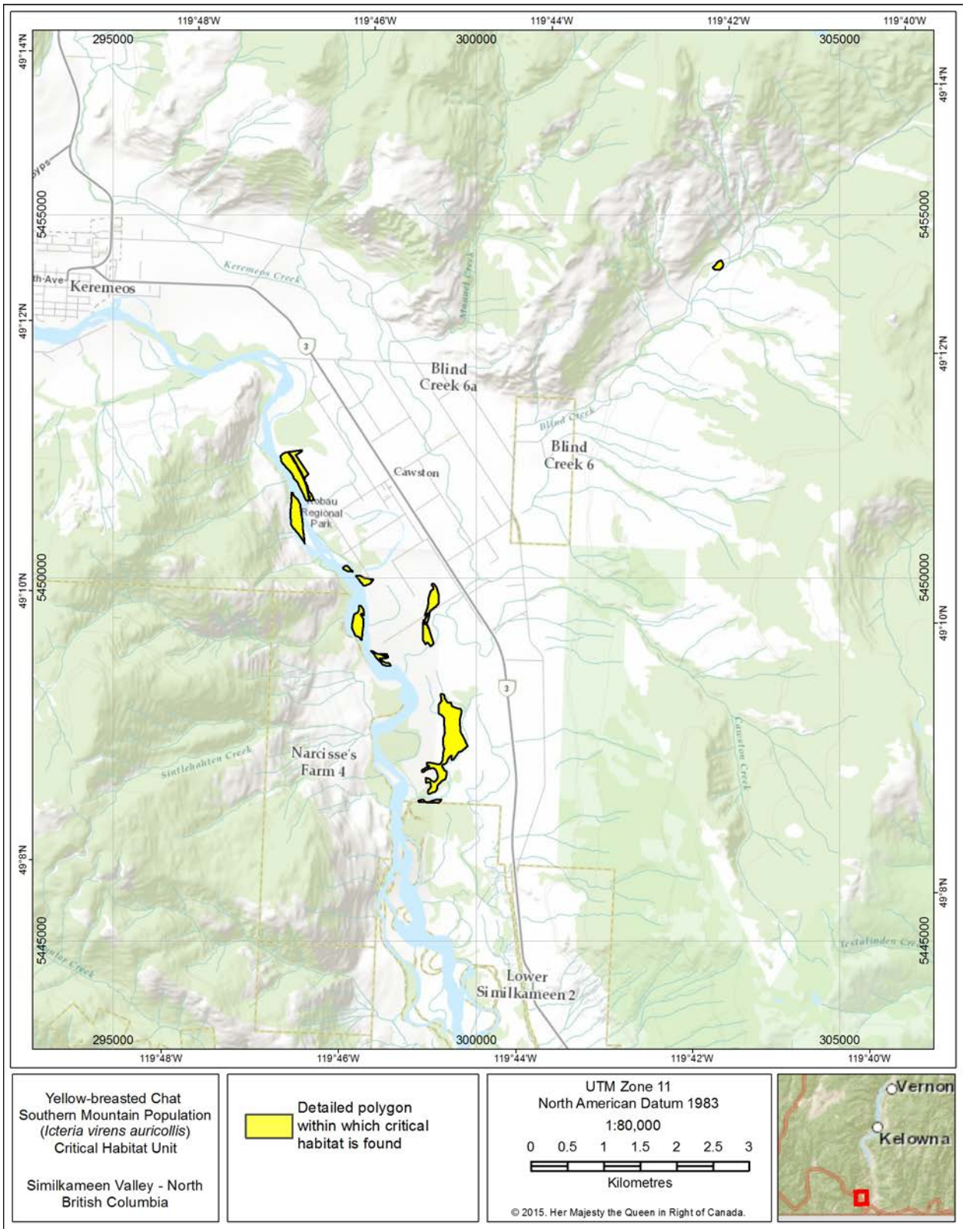

Figure AB6: Critical habitat for the Yellow-breasted Chat *auricollis* subspecies (Southern Mountain population) at Similkameen Valley - North, B.C. is represented by the yellow shaded units where the criteria and methodology set out in section 7.1 are met.

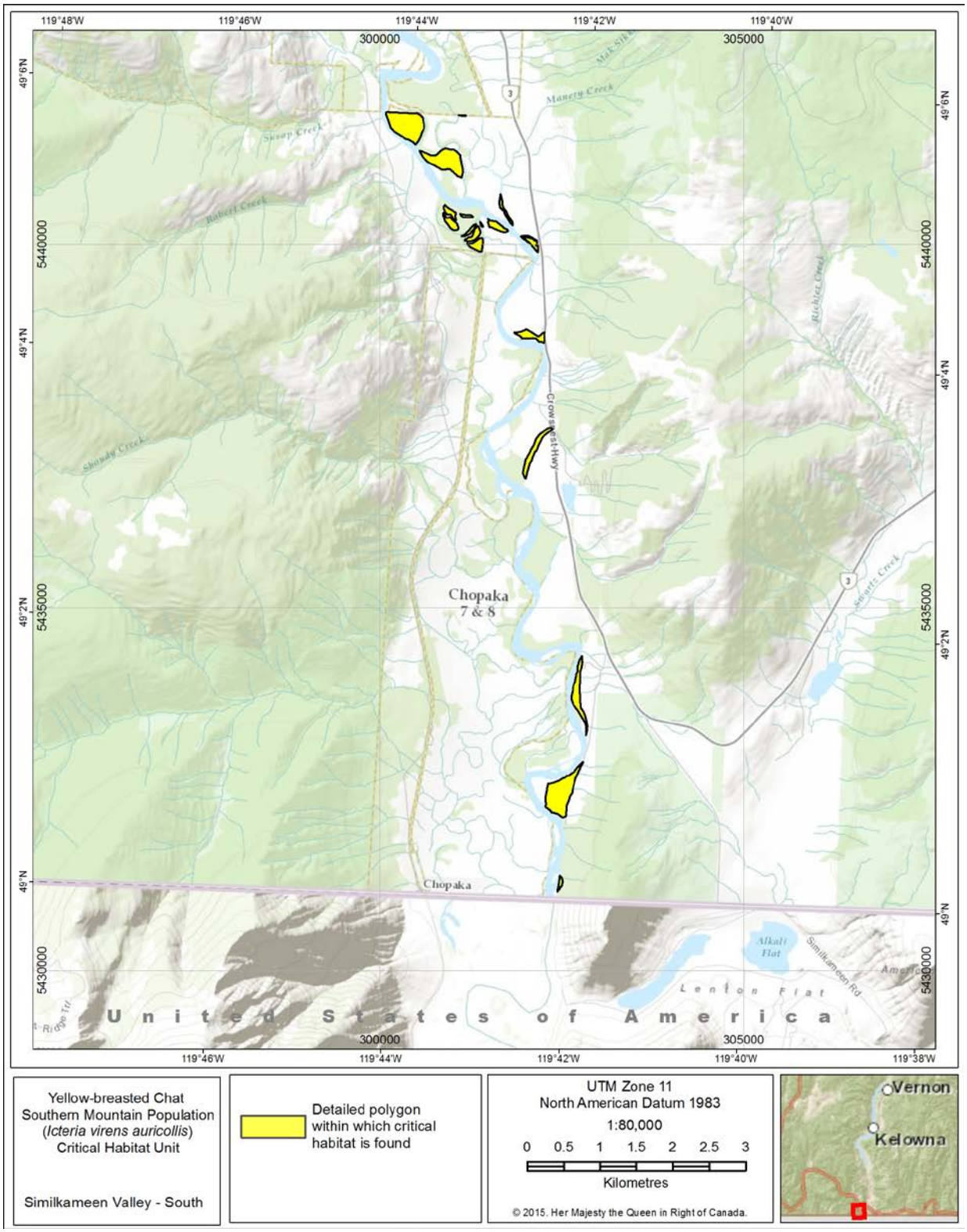

Figure AB7: Critical habitat for the Yellow-breasted Chat *auricollis* subspecies (Southern Mountain population) at Similkameen Valley - South, B.C. is represented by the yellow shaded units where the criteria and methodology set out in section 7.1 are met.

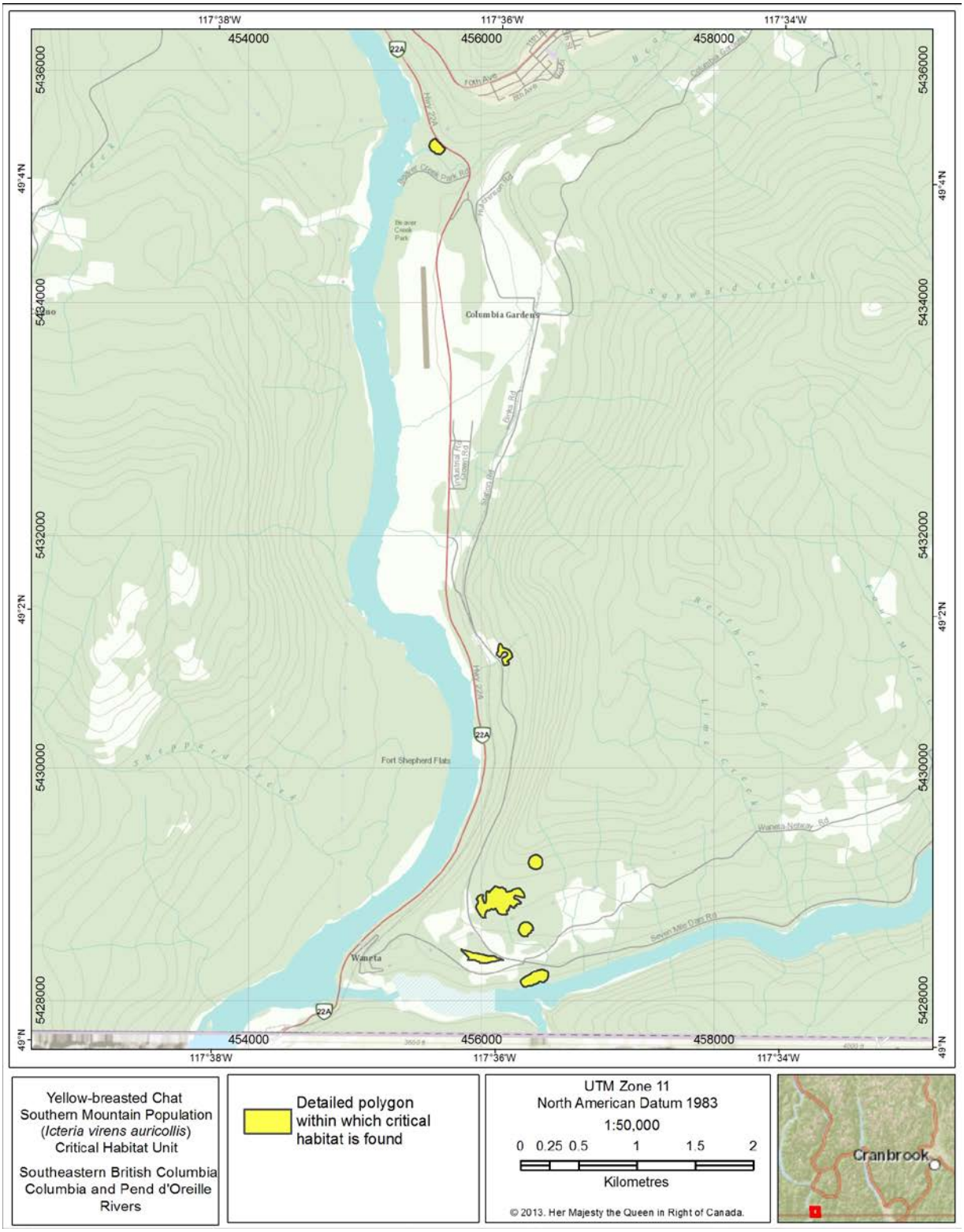

Figure AB8: Critical habitat for the Yellow-breasted Chat *auricollis* subspecies (Southern Mountain population) at the Columbia and Pend d'Oreille rivers, B.C. is represented by the yellow shaded units where the criteria and methodology set out in section 7.1 are met.

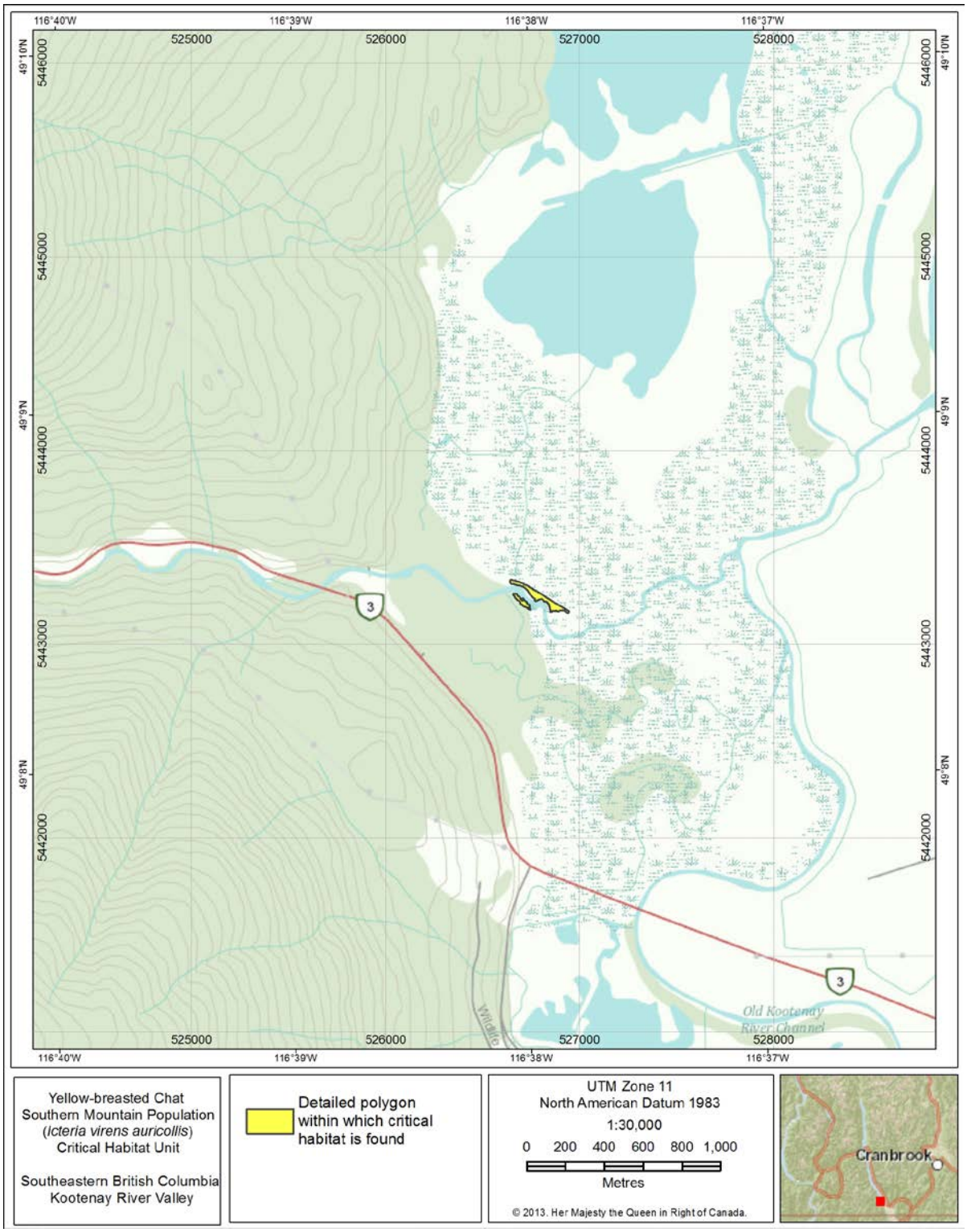

Figure AB9: Critical habitat for the Yellow-breasted Chat *auricollis* subspecies (Southern Mountain population) at the Kootenay River Valley, B.C. is represented by the yellow shaded units where the criteria and methodology set out in section 7.1 are met.