

Central Yukon Rapid Ecoregional Assessment



Draft Final report prepared for:
Bureau of Land Management
U.S. Department of the Interior

Edited by E.J. Trammell, T. Boucher, M.L. Carlson, N. Fresco, J.R. Fulkerson, M.L. McTeague, J. Reimer, and J. Schmidt.

July 2016

Prepared for:

National Operations Center
Bureau of Land Management
U.S. Department of the Interior
Building 50, Denver Federal Center
Denver, Colorado 80225



*It is the mission of the Bureau of Land Management
to sustain the health, diversity, and productivity of
the public lands for the use and enjoyment of
present and future generations.*

Prepared by:

Alaska Center for Conservation Science
University of Alaska Anchorage
3211 Providence Dr.
Anchorage, Alaska 99508

Institute of Social and Economic Research
University of Alaska Anchorage
3211 Providence Dr.
Anchorage, Alaska 99508

Scenarios Network for Alaska Planning
University of Alaska Fairbanks
3352 College Road
Fairbanks, Alaska 99709

Suggested Citations:

Individual Chapters

Chapter Author(s). 2016. Chapter Title. *In*: Trammell, E.J., T. Boucher, M.L. Carlson, N. Fresco, J.R. Fulkerson, M.L. McTeague, J. Reimer, and J. Schmidt, eds. 2016. *Central Yukon Rapid Ecoregional Assessment*. Prepared for the Bureau of Land Management, U.S. Department of the Interior. Anchorage, Alaska. ### pp.

Collective Document

Trammell, E.J., T. Boucher, M.L. Carlson, N. Fresco, J.R. Fulkerson, M.L. McTeague, J. Reimer, and J. Schmidt, eds. 2016. *Central Yukon Rapid Ecoregional Assessment*. Prepared for the Bureau of Land Management, U.S. Department of the Interior. Anchorage, Alaska.

Assessment Management Team and Technical Team Contributors:

BLM

Alaska Fire Service

Eric Miller

Alaska State Office

Case Burns

Eric Geisler

Matt Varner

Central Yukon Field Office

Tim Hammond

Bob Karlen

Tim La Marr*

Jennifer McMillan

Eastern Interior Field Office

Ruth Gronquist

Lenore Heppler

Jim Herriges

Fairbanks District Office

Cindy Hamfler

National Operations Center

Karla Rogers

Vanessa Stepanek

Megan Walz

David Wood

Office of Pipeline Monitoring

Laurie Hull-Engles

Alyssa Sterrett

Oregon

Stewart Allen

Fish and Wildlife

Service

Arctic NWR

Brian Glaspell

Kanuti National Wildlife Refuge

Chris Hardwood

Northwestern Interior Forest LCC

Amanda Robertson

Tetlin National Wildlife Refuge

Shawn Bayless

Yukon Flats National Wildlife Refuge

Steve Berendzen

Mark Bertram

NPS

Arctic Network Inventory & Monitoring Program

Kyle Joly

Jim Lawler

Gates of the Arctic National Park and Preserve

Greg Dudgeon

Kobuk Valley National Park

Frank Hays

USGS

Alaska Science Center

Rachel Loehman

State of Alaska

Fish and Game

Sue Rodman

Department of Natural Resources

Kimberley Maher

*Assessment Management Team Chair

CYR REA Team Members:

BLM

Alaska State Office

Scott Guyer

National Operations Center

David Wood

University of Alaska

University of Alaska

Anchorage

Alaska Center for Conservation Science

Megumi Aisu

Bonnie Bernard

Tina Boucher

Matthew Carlson

Lindsey Flagstad

Justin Fulkerson

Marcus Geist

Leah Kenney

Priscilla Lema

Monica McTeague

Dustin Merrigan

Timm Nawrocki

Jesika Reimer

Dan Rinella

Rebecca Shaftel

Jamie Trammell*

Institute of Social and Economic Research

Lauren Fritz

Jennifer Schmidt

Diwakar Vadapalli

University of Alaska

Fairbanks

Scenarios Network for Alaska and Arctic Planning

Angelica Floyd

Nancy Fresco

Lena Krutikov

Geophysical Institute Permafrost Lab

Sergey Marchenko

*Principal Investigator

Acronyms Used in This Document:

A2	Emissions scenario selected for this assessment, called "A2" by IPCC
ACCS	Alaska Center for Conservation Science
ACEC	Area of Critical Environmental Concern
ACRC	Alaska Climate Research Center
ACS	American Community Survey
ADEC	Alaska Department of Environmental Conservation
ADEED	Alaska Department of Education and Early Development
ADFG	Alaska Department of Fish and Game
ADLWD	Alaska Department of Labor and Workforce Development
ADNR	Alaska Department of Natural Resources
ADOT	Alaska Department of Transportation
AEA	Alaska Energy Authority
AET	Actual EvapoTranspiration
AFS	Alaska Fire Service
AHDR	Arctic Human Development Record
AIAN	American Indian and Alaska Native
AKEPIC	Alaska Exotic Plants Information Clearinghouse
AKGAP	Alaska Gap Analysis Program
AKNHP	Alaska Natural Heritage Program
AKVM	Vegetation Map of Northern, Western, and Interior Alaska
ALARI	Alaska Local And Regional Information (of ADLWD)
ALFRESCO	ALaska FFrame-based EcoSystem COde
ALT	Active Layer Thickness
AMIRA	Autoregressive Integrated Moving Average
AMLIS	Abandoned Mine Land Inventory System
AMT	Assessment Management Team
ANCSA	Alaska Native Claims Settlement Act
ANILCA	Alaska National Interest Lands Conservation Act
ANTHC	Alaska Native Tribal Health Consortium
AR4	fourth assessment report of the IPCC
ARDF	Alaska Resource Data File
ASGDC	Alaska State Geo-spatial Data Clearinghouse
ASI	Arctic Social Indicators
ATV	All-Terrain Vehicle
AUC	Area-Under-Curve
AVCP	Alaska Village Council Presidents
AVEC	Alaska Village Electric Cooperative
AWC	Anadromous Waters Catalog
BGEPA	Bald and Golden Eagle Protection Act
BIOTICS	conservation data framework developed by NatureServe
BISON	Biodiversity Serving Our Nation
BLM	Bureau of Land Management
BpS	Biophysical Setting
CA	Change Agent
CART	Classification And Regression Tree
CBVM	Circumboreal Vegetation Map

CE	Conservation Element
CMIP	Coupled Model Intercomparison Project
CPI	Consumer Price Index
CRU	Climate Research Unit
CS	Classification Success
CSIS	Community Subsistence Information System
CuCarb	carbonate-hosted copper deposits
CYR	Central Yukon
DEM	Digital Elevation Model
DEW	Distant Early Warning
DMTS	Delong Mountain Transportation System
DOF	Date of Freeze
DOT	Date of Thaw
DU	Ducks Unlimited
ECHAM5	an atmospheric general circulation model
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
ESRI	Environmental Services Research Institute
FAA	Federal Aviation Administration
FNSB	Fairbanks North Star Borough
FUDS	Formerly Used Defense Sites
GBIF	Global Biodiversity Information Facility
GCM	Global Circulation Model
GDD	Growing Degree Days
GDP	Gross Domestic Product
GIPL	Geophysical Institute Permafrost Lab
GIS	Geographic Information System
GMU	Game Management Unit
GTLF	Ground Transportation Linear Feature
HDR	HDR, Inc. (engineering and environmental consulting firm)
HF	Heating Fuel
HUC	Hydrologic Unit Code
IC	Interim Conveyed
IEM	Integrated Ecosystems Model
IfSAR	Interferometric Synthetic Aperture Radar
IK/AK	Indigenous Knowledge/Aboriginal Knowledge
IPCC	Intergovernmental Panel on Climate Change
IR	Invasiveness Rank
ISER	Institute of Social and Economic Research
LANDFIRE	LANDscape Fire and REsource management planning
LCM	Landscape Condition Model
LEK	Local Ecological Knowledge
LIB	Large Intact Block
LK	Local Knowledge
LOGS	Length Of Growing Season
MAGT	Mean Annual Ground Temperature
MaxEnt	Maximum Entropy (a statistical method for probability distribution)
MCA	Medieval Climate Anomaly
mph	miles per hour

MPI	Max Planck Institute
MQ	Management Question
MS	Material Site
NALCMS	North American Land Change Monitoring System
NANA	Northwest Arctic Native Association
NCES	National Center for Education Statistics
NDVI	Normalized Difference Vegetation Index
NED	National Elevation Dataset
NEPA	National Environmental Policy Act
NHD	National Hydrography Dataset
NLCD	National Land Cover Database
NOAA	National Oceanic and Atmospheric Administration
NoAK	Northern Alaska subsections map
NOC	National Operations Center (of BLM)
NPR-A	National Petroleum Reserve-Alaska
NPS	National Park Service
NVC	National Vegetation Classification
NWAB	NorthWest Arctic Borough
NWR	National Wildlife Refuge
PA	Plant Association
PAR	Partitioning Around Medoids
PCE	Power Cost Equalization
PCMDI	Program for Climate Model Diagnosis and Intercomparison
PET	Potential EvapoTranspiration
PGE	Platinum Group Element
Placer	placer and paleoplacer gold
PRISM	Parameter-elevation Regressions on Independent Slope Models
REA	Rapid Ecoregional Assessment
REE	Rare Earth Elements
REF	Renewable Energy Fund
RS	Revised Statute
SandU	Sandstone Uranium
SDF	Snow Day Fraction
SDM	Species Distribution Model
SNAP	Scenarios Network for Alaska and Arctic Planning
SnGranite	tin-tungsten-molybdenum-fluorspar deposits associated with specialized granites
STATSGO	STATE Soil GeOgraphic dataset
SWI	Summer Warmth Index
TA	Tentative Approval
TAZ	Traffic Analysis Zone
Tech Team	Technical Team
TEK	Traditional Ecological Knowledge
TEM	Terrestrial Ecosystem Model
TIGER	Topologically Integrated Geographic Encoding and Referencing
TK	Traditional Knowledge
TNC	The Nature Conservancy
TTL	Tribal Traditional Lifeways
UA	University of Alaska
UAF	University of Alaska Fairbanks

UAM	University of Alaska Museum
USD	United States Dollar
USDA	United States Department of Agriculture
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey

Note on Structure of the Final Report

The final report for the Central Yukon (CYR) Rapid Ecoregional Assessment (REA) is partitioned into eleven distinct documents organized by topic as listed below. Each section is assigned a letter heading:

Section A. Cover Sheet (this document)

Section B. Introduction

Section C. Abiotic Change Agents

Section D. Biotic Change Agents

Section E. Anthropogenic Change Agents

Section F. Landscape and Ecological Integrity

Section G. Terrestrial Coarse-Filter Conservation Elements

Section H. Terrestrial Fine-Filter Conservation Elements

Section I. Aquatic Coarse-Filter Conservation Elements

Section J. Aquatic Fine-Filter Conservation Elements

Section K. Data Gaps and Omissions

Tables of contents, management questions, figures, and tables with associated page numbers are listed at the beginning of each section.

The report is organized into stand-alone sections to help readers quickly navigate to sections of interest without having to read the entire assessment comprehensively.