

IGBC Science Subcommittee

DECEMBER 2025



Science Subcommittee 2025

- Hilary Cooley (USFWS)
- Cecily Costello (MTFWP-NCDE)
- Matthew Gould (USGS-GYE)
- Wayne Kasworm (USFWS-SE/CYE)
- Michael Proctor (Canada)
- Frank T. van Manen (USGS)



2025 Status Update

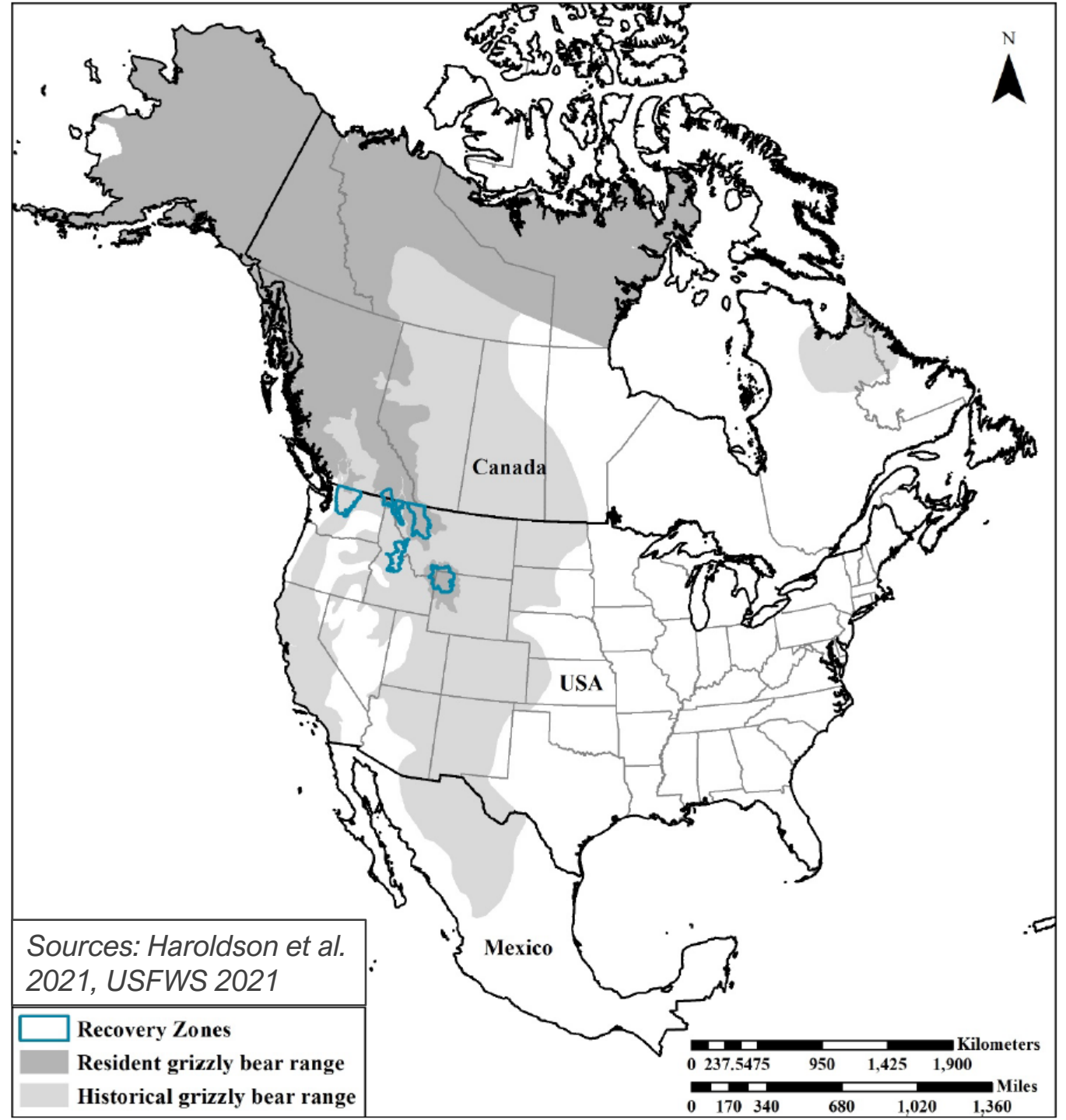
THE BIG PICTURE

Photo: Jake Davis

The Big Picture

4 Recovery Zones with occupied range

Southern extent of occupied range in North America



USFWS Recovery Zones

**North Cascades
(NCE)**

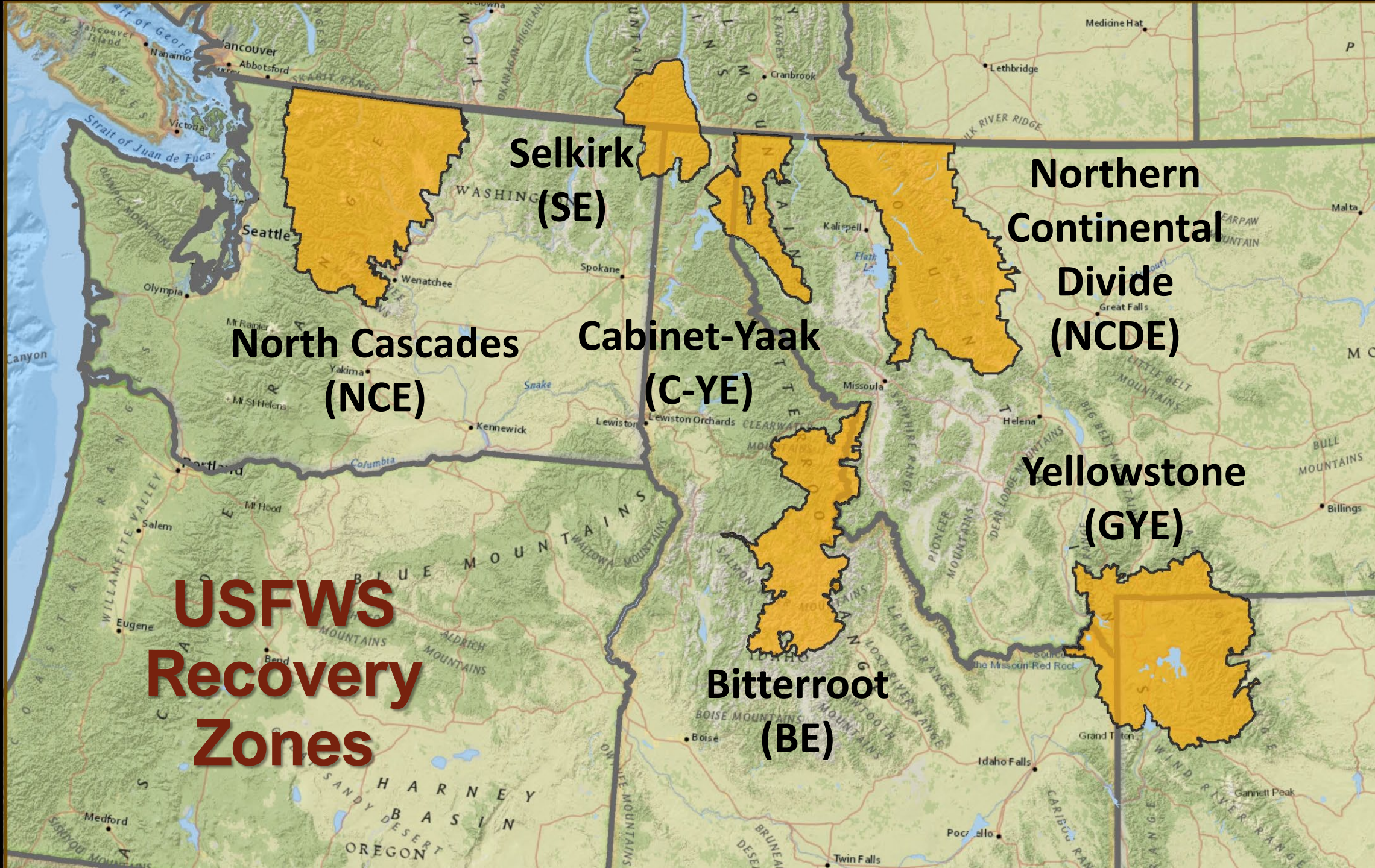
**Selkirk
(SE)**

**Cabinet-Yaak
(C-YE)**

**Bitterroot
(BE)**

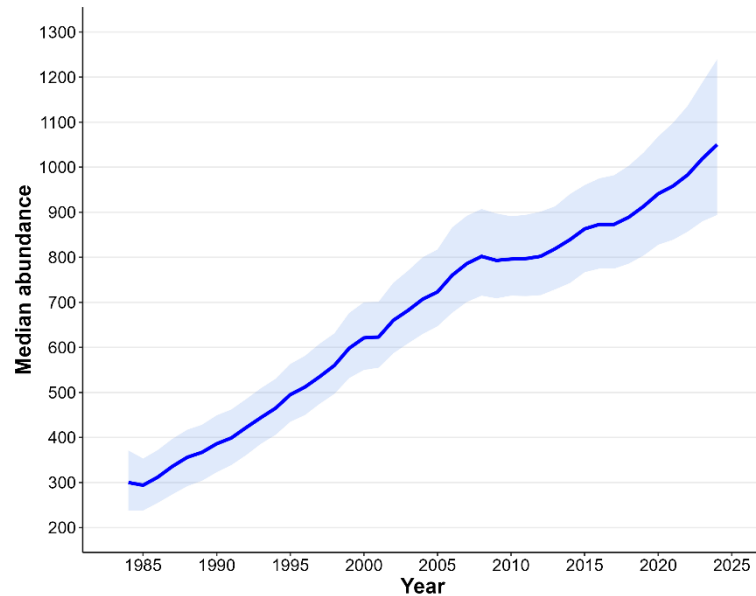
**Northern
Continental
Divide
(NCDE)**

**Yellowstone
(GYE)**



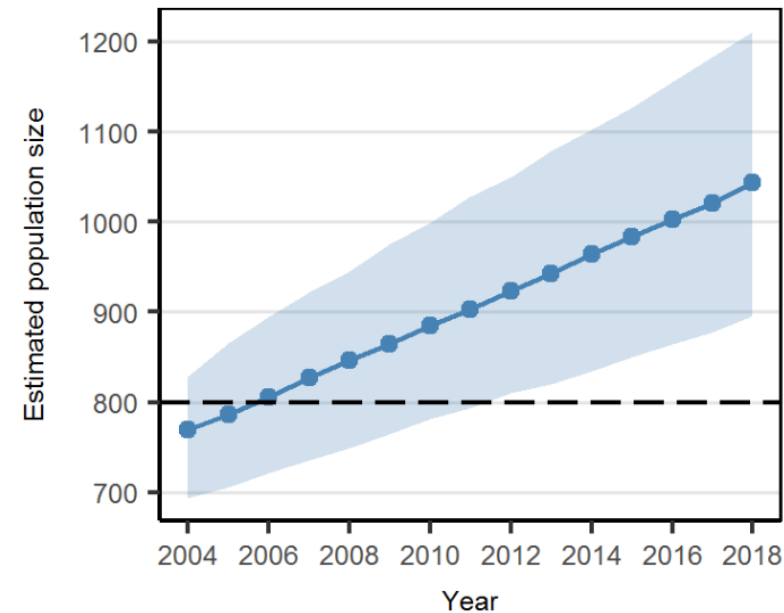
Population – size and trend

GYE: Population estimate (2024): 1,050
Rate of growth (1983–2024): 3.3%



C-YE: Population estimate (2024): 60-65
Rate of growth (1983–2024): 1.7%

NCDE: Population estimate (2018): 1,047
Rate of growth (2004–2018): 2.3%



SE: Population (BC + US) estimate (2024): 80-90
Rate of growth (1983–2024): 2.9%

Sources: Proctor et al. 2012; Gould et al. 2025a,b*; Costello et al. 2016, 2023; Kasworm et al. 2025a,b

* Preliminary information-subject to revision. Not for citation or distribution



Habitat security – metrics

Ecosystem	Public lands in Recovery Zone	Protected lands in Recovery Zone ^a	Private land - % in easements or land trusts
GYE	98%		
NCDE	93%		
C-YE	98%		
SE (US portion)	97%		
SE (Canada portion)	77%		
BE	99.9%		
NCE	90%		



Habitat security – metrics

Ecosystem	Public lands in Recovery Zone	Protected lands in Recovery Zone ^a	Private land - % in easements or land trusts
GYE	98%	82%	
NCDE	93%	67%	
C-YE	98%	44%	
SE (US portion)	97%	38%	
SE (Canada portion)	77%	10%	
BE	99.9%	98%	
NCE	90%	64%	

^a Includes designated and defacto wilderness + Inventoried Roadless Areas + Parks + BC Wildlife Management Area

Source: U.S. Fish and Wildlife Service 2021



Habitat security – metrics

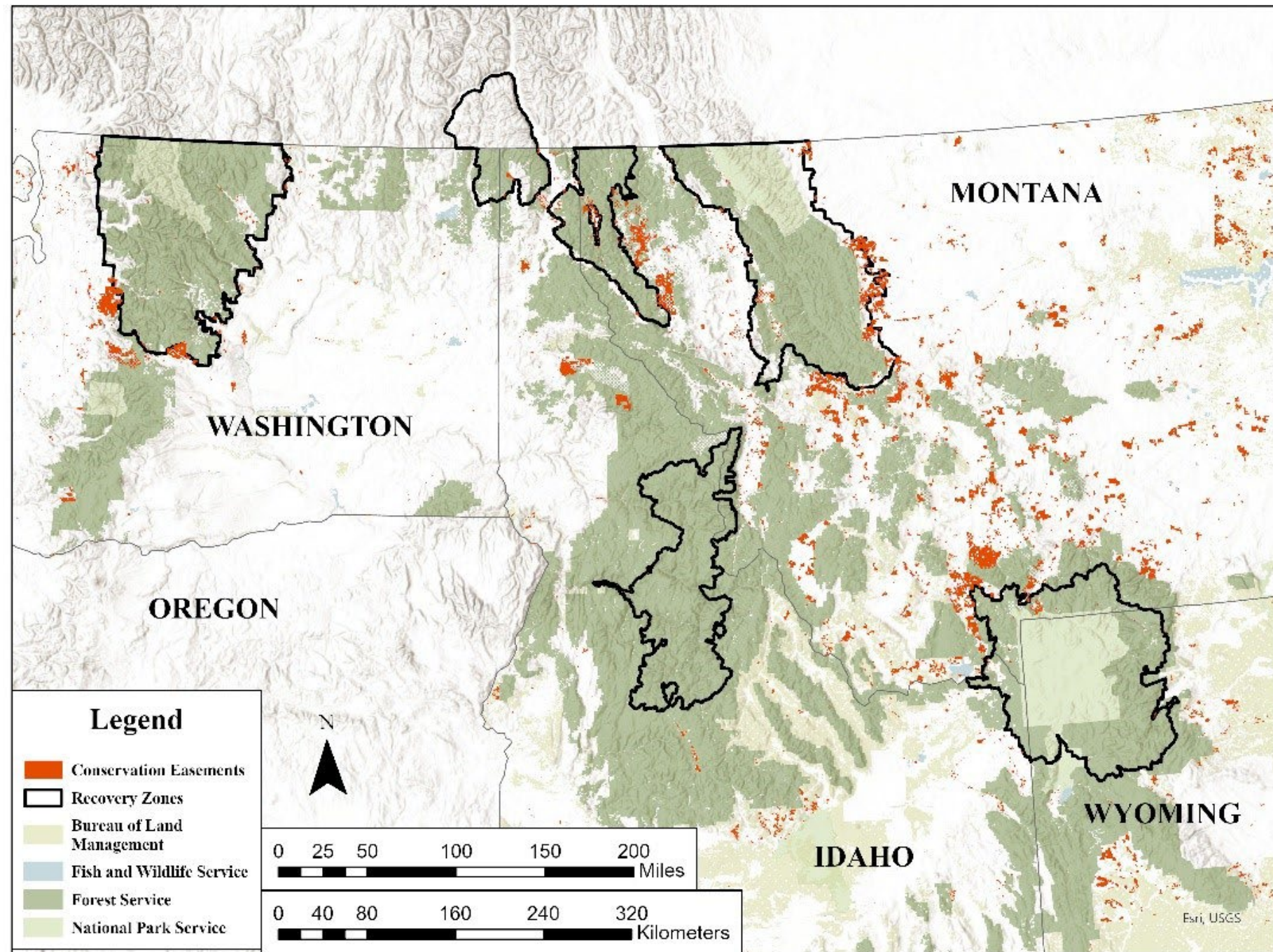
Ecosystem	Public lands in Recovery Zone	Protected lands in Recovery Zone ^a	Private land - % in easements or land trusts
GYE	98%	82%	40% in RZ 24% out RZ, in DMA
NCDE	93%	67%	45% in RZ 22% in Zone 1 11% in Zone 2
C-YE	98%	44%	40% in RZ
SE (US portion)	97%	38%	N/A
SE (Canada portion)	77%	10%	18% in RZ
BE	99.9%	98%	--
NCE	90%	64%	13% in RZ

^a Includes designated and defacto wilderness + Inventoried Roadless Areas + Parks + BC Wildlife Management Area

Source: U.S. Fish and Wildlife Service 2021



Conservation easements

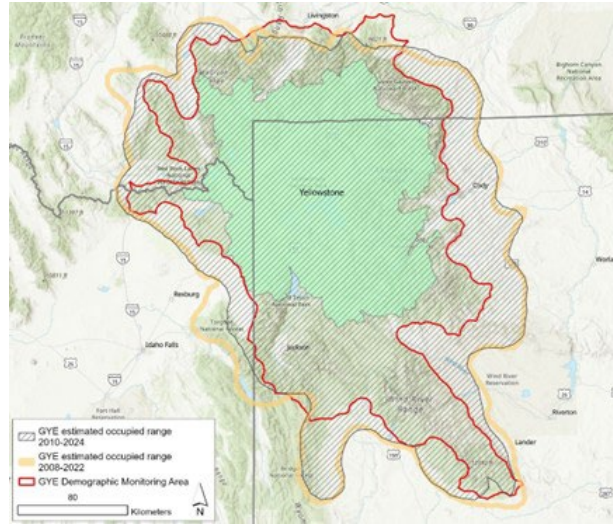


Source: U.S. Fish and Wildlife Service

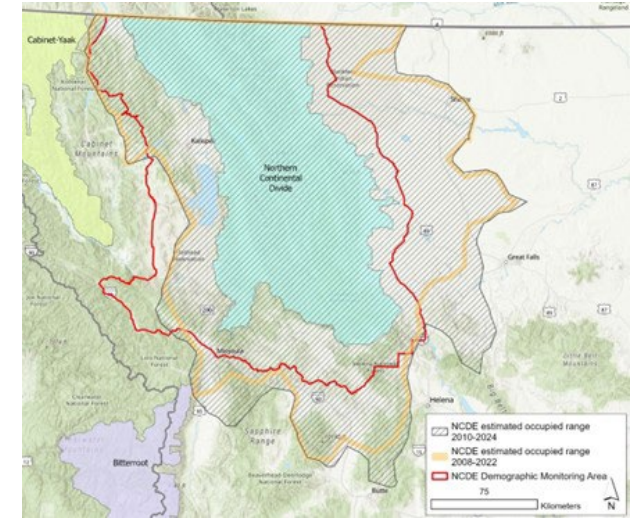


Occupied range – area and trend

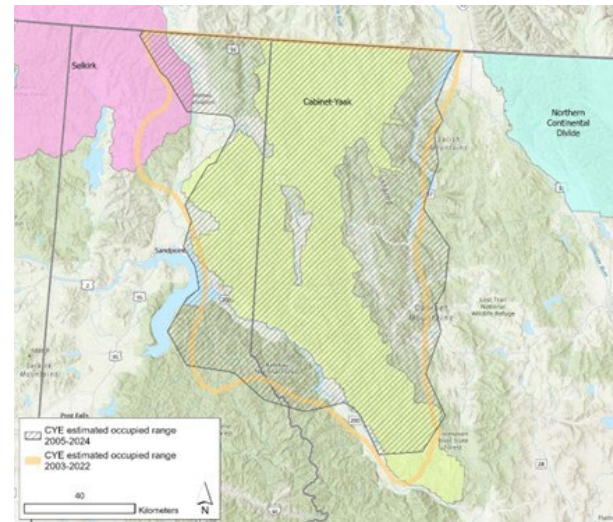
GYE: 67,608 km²
(stabilizing?)



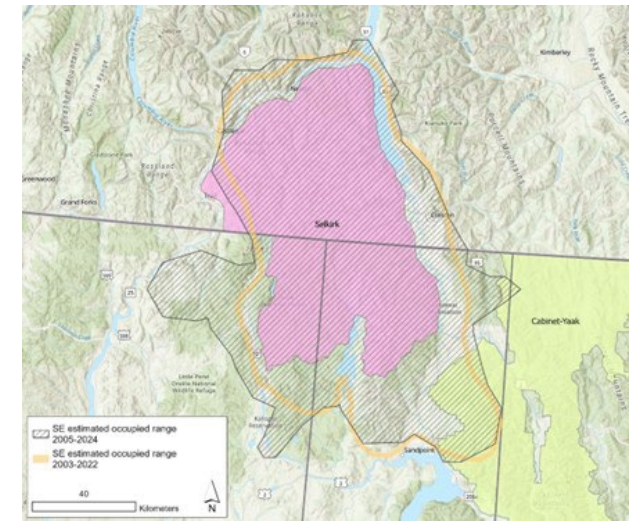
NCDE: 62,287 km²
(expanding)



C-YE: 11,990 km²



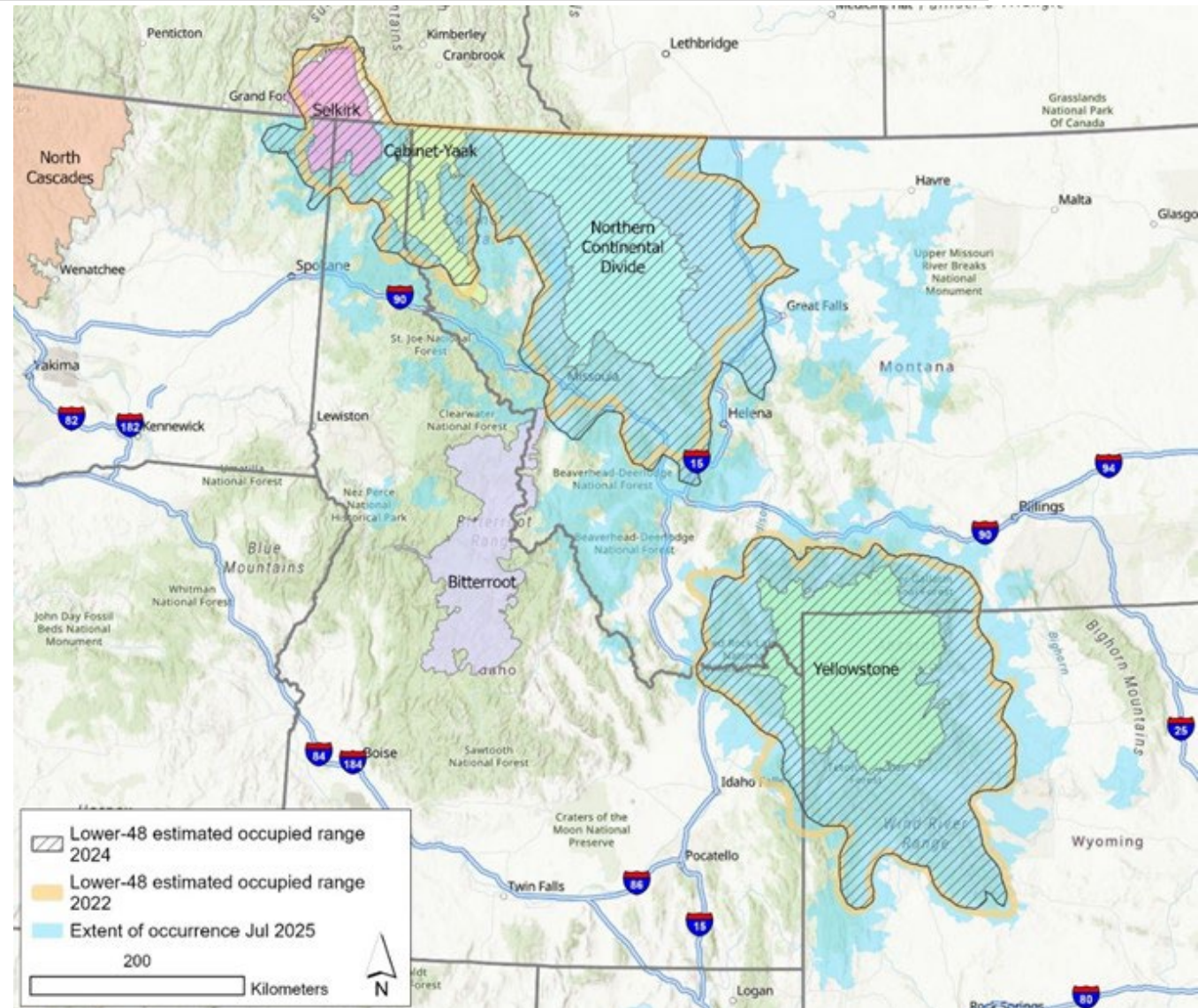
SE: 13,192 km²
(5,223 km² in BC)



Combined range

Total occupied range in US:
147,588 km² (56,984 mi²)

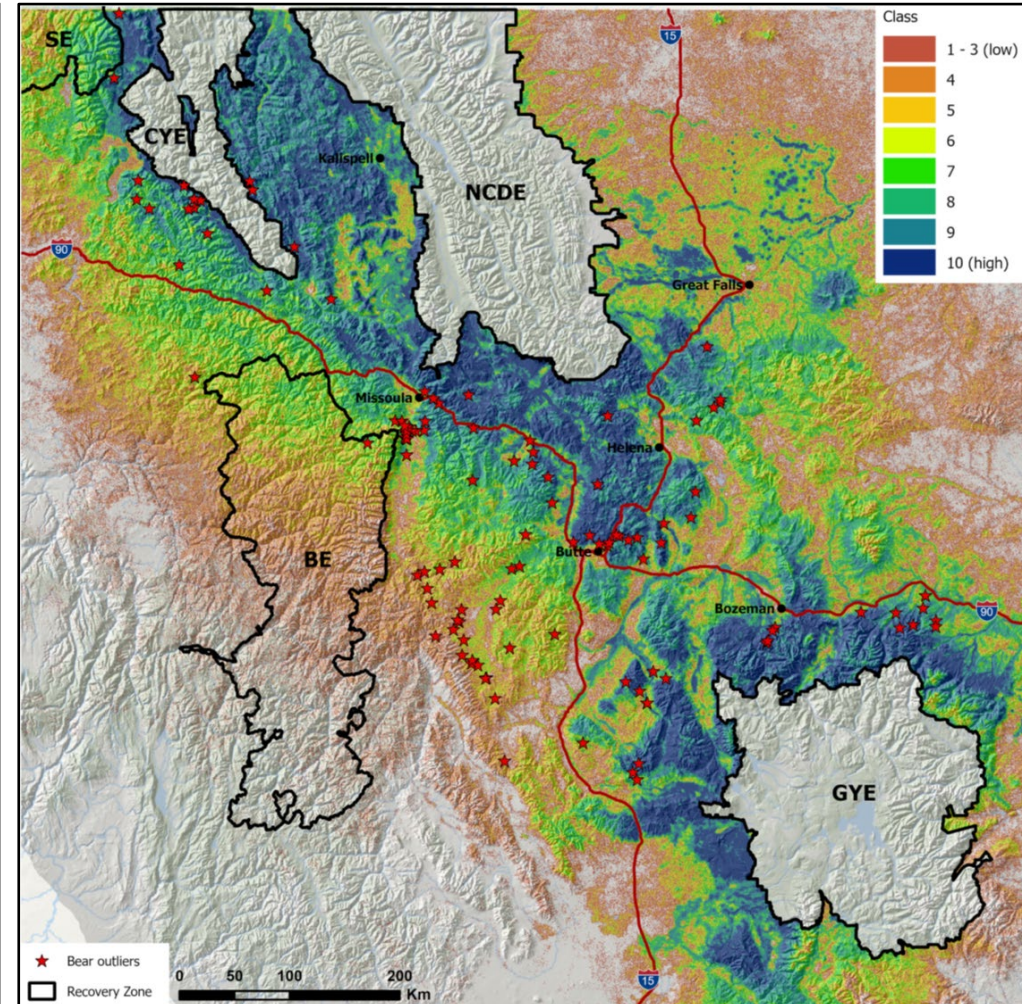
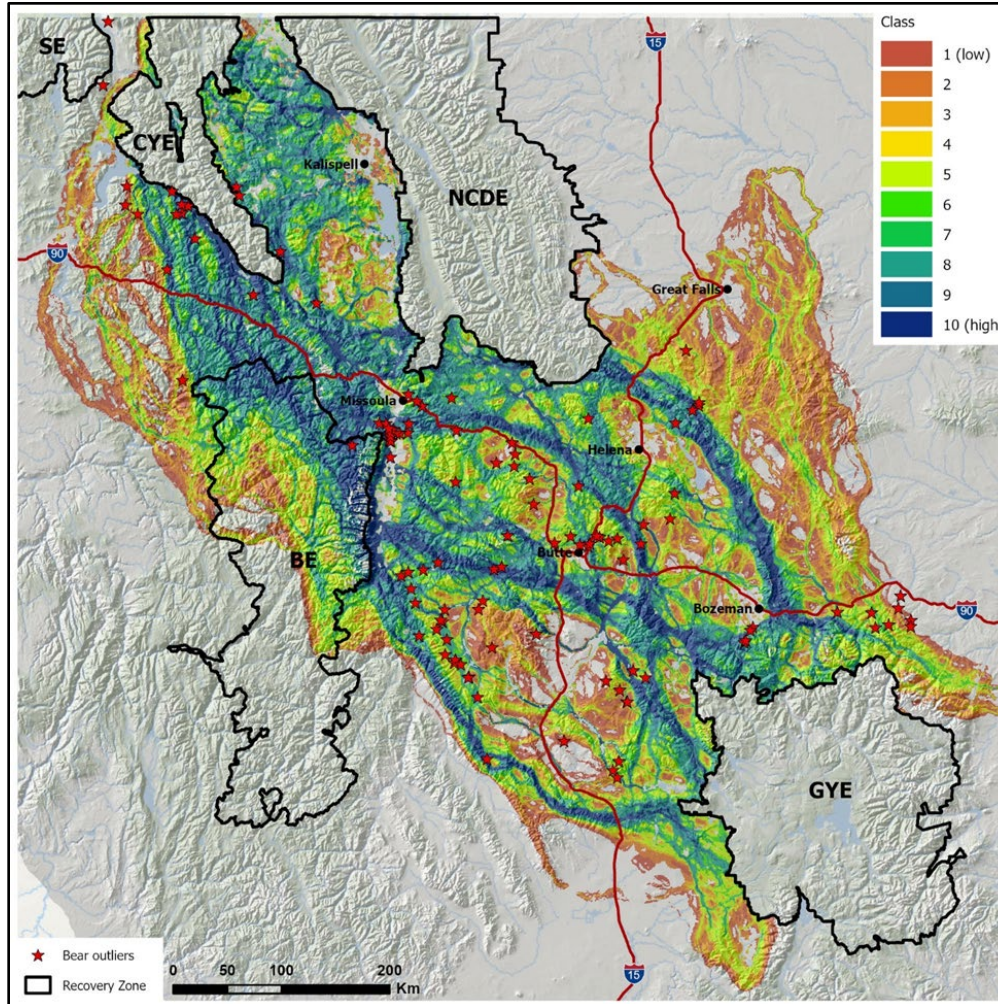
Total extent of occurrence
("maybe present" area):
241,951 km² (93,418 mi²)



Connectivity

Movement pathways for female grizzly bears

- Directed (left)
- Undirected (right)



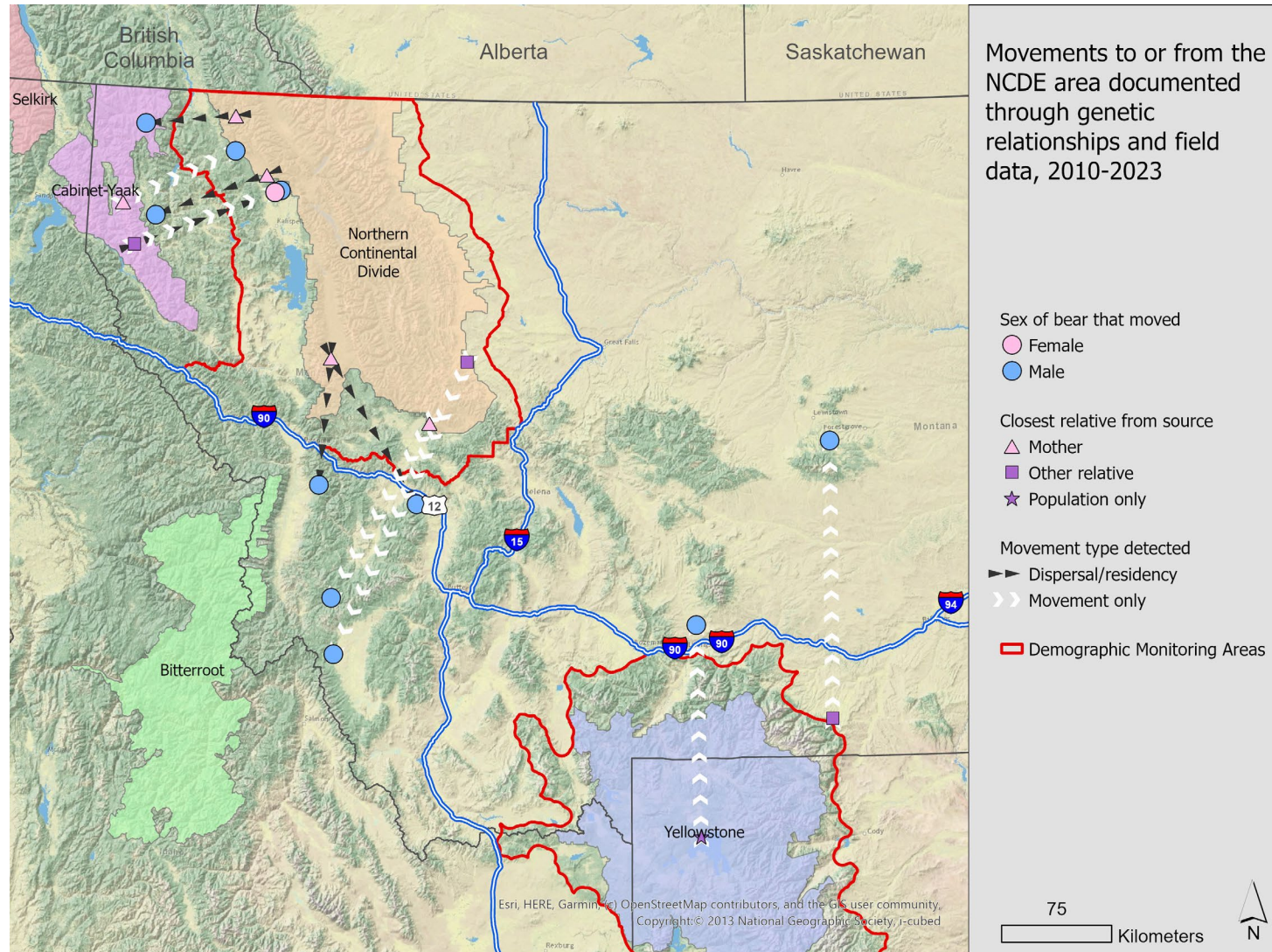
Download maps: <https://doi.org/10.5066/P91EWUO8>

Source: Sells et al. 2023



Connectivity

To or from
NCDE area

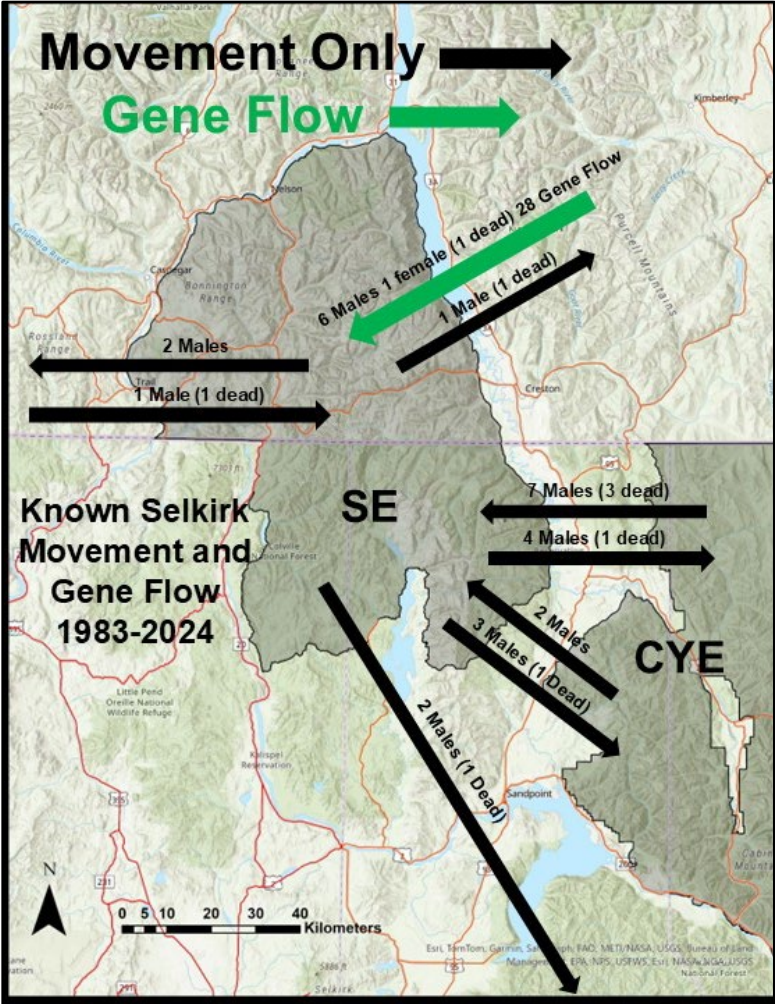


Sources: Costello et al. 2021, 2022, 2023, 2024

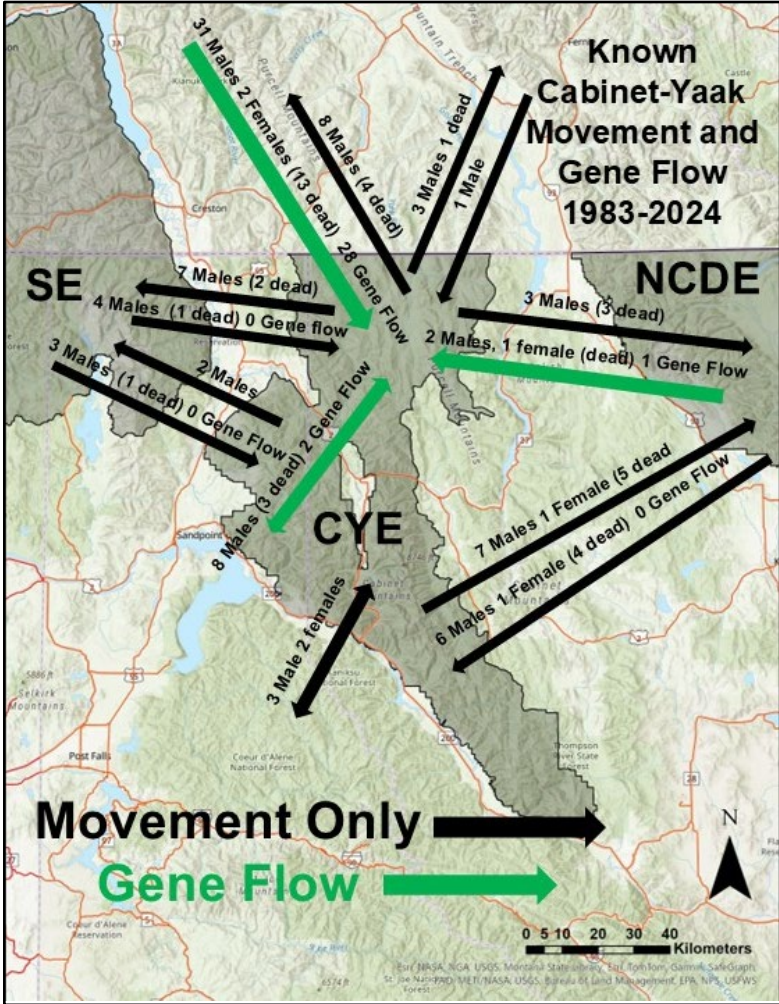
Connectivity

Note: new genetics data from 2024 identifies limited gene flow from NCDE to Yaak and Yaak to Cabinets

SE

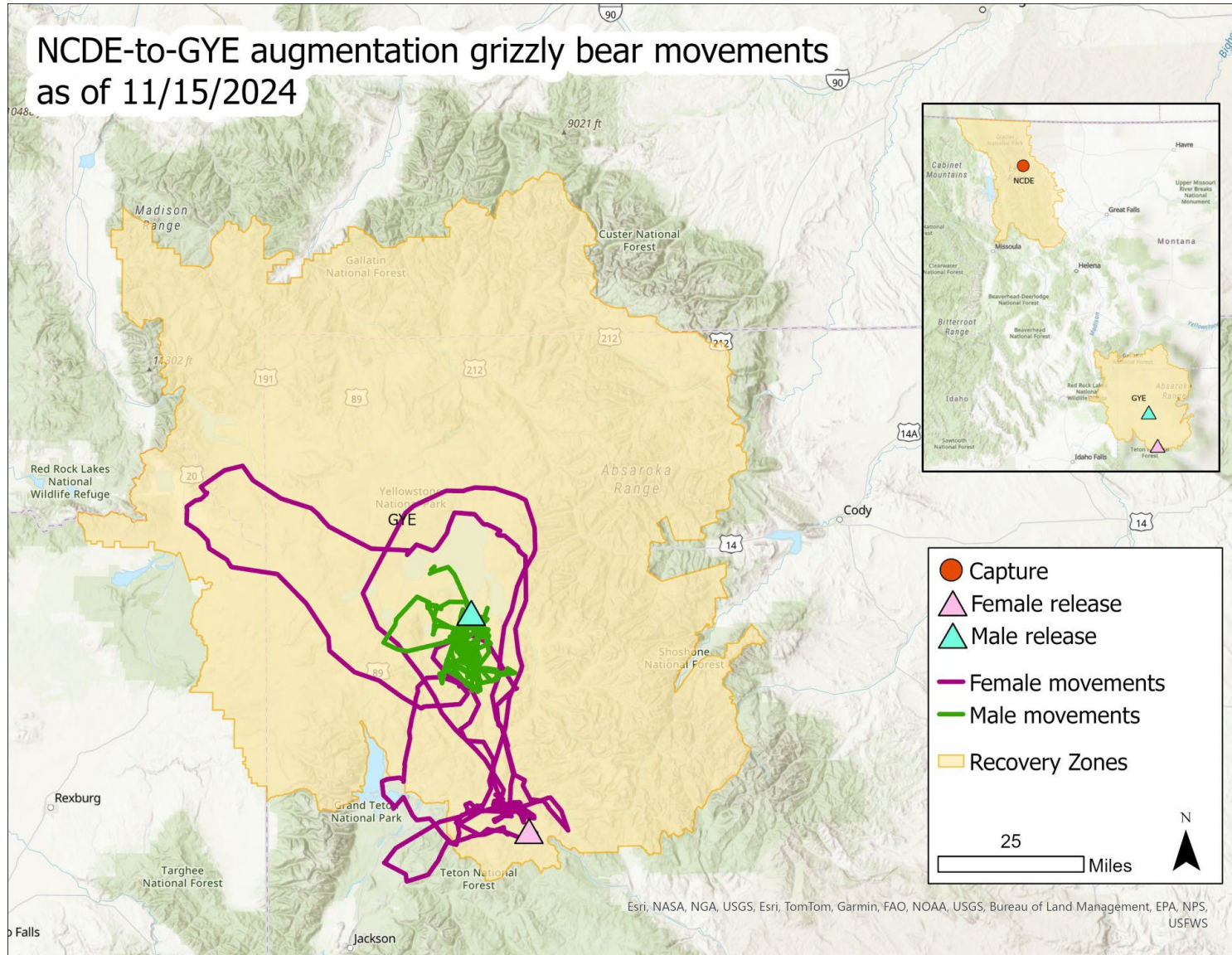


C-YE



Sources: Kasworm et al. 2025a, 2025b

Connectivity



By the end of 2025, both individuals were present within the GYE and most of their activity was centered in the recovery zone/primary conservation area.



Ongoing and recent science

Underline = recent publication

Demographics: Selkirk BC population estimate (Proctor 2025); detecting birth events using activity data (NCDE, GYE, CYE, SE, Gates of the Arctic Park and Preserve); density estimation using cameras in YNP (GYE, with MSU); spatially explicit survival (GYE, with Univ. Trento); Integrated Population Model (GYE); estimating time to reach BE targets under EIS alternatives (NCDE, GYE, CYE, SE)

Habitat and connectivity: habitat modeling and connectivity areas (SE+CYE, with UI); effectiveness of BMAs in YNP (GYE, with MSU); effects of forest management and wildfire disturbance on habitat selection and movements (NCDE, UM); huckleberry mapping for SE+CYE; prioritizing habitat on private lands (GYE, with MSU)

Bear ecology: dispersal (NCDE and CYE); drivers of birth timing (NCDE, GYE, CYE, SE, Gates of the Arctic Park and Preserve); post-den movements to identify females with cubs (NCDE, GYE; with FWS Polar Bear Program, CYE+SE); grizzly bear use and army cutworm moths (GYE); complete blood count reference panel for grizzly bears (GYE, with Polish Academy of Sciences)

Genetics: SE+CYE (UI MS Thesis, Megan Turnock 2024); grizzly bear genome project (with WSU)

Activity: daily movement rates (GYE + European populations, with Univ. Rome-La Sapienza); activity patterns (GYE, with Univ. Rome-La Sapienza); accelerometer data to predict bear behaviors (GYE + Alberta, with WSU, fRi)

Human-bear interactions and conflict: Proctor et al. 2023 (Berries and Bullets monograph); responses to residential human-bear conflicts (NCDE, southern BC); grizzly bear use of grain bins (NCDE); efficacy of guard dogs to reduce human-bear conflict (NCDE, with Utah State University); efficacy of scare devices to reduce human-bear conflict (NCDE); efficacy of hazing to reduce human-bear conflict (NCDE); spatiotemporal patterns of livestock depredation (GYE, with UC-Berkeley)

Social science: comment analysis of 2018 DEIS and survey (NCE, with U-Mich); Montana human dimensions studies (with UM)

Recreation: responses to recreational activities in YNP (GYE, with MSU)

Climate change: YNP grizzly bear foods and demographics (GYE, with MSU); decision tools for managers (GYE, with MSU)