Cabinet Mountains Grizzly Bear Augmentation Monitoring

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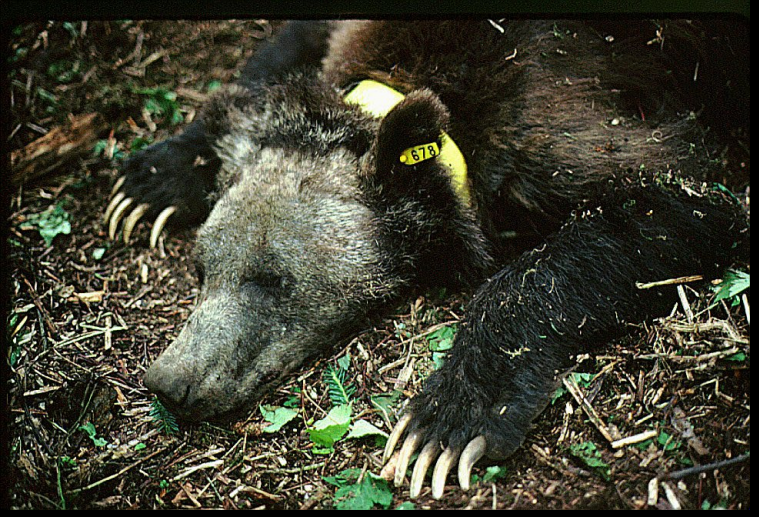
- Background
- Augmentation Test 1990-95
- Phase Two Augmentation 2005-Present
- Genetic Monitoring
- Notable Movements
- Lessons learned
- SCYE Vital Rates
- Movements and gene flow

Cabinet-Yaak Grizzly Bear Recovery Area

- Northwest US specifically Northwest MT and North ID
- Adjacent to British Columbia
- 6800 KM^2
- Cabinet Mountains portion between Kootenai and Clark Fork Rivers



Cabinet Mountains 1988 Management Conclusions and Recommendations

- Population may be < 15 individuals
- Little observed reproduction
- High mortality rates
- No observed linkage to other populations
- Recommend population augmentation, mortality reduction, increased habitat security

Kasworm, W. F. and T. L. Manley. 1988. Grizzly bear and black bear ecology in the Cabinet Mountains of Northwest Montana. Montana Department Fish, Wildlife, Parks, Helena.

Public Involvement

- Prepare an Environmental Assessment in 1988 with Two Main Action Alternatives: 1. Augment with 8 bears, 2. Cross-fostering with black bears
- Significant public opposition
- Postpone program for one year and engage a citizen's advisory group
- Eliminate cross-fostering
- Conduct a test of the technique with 4 bears
- Return to advisory group with results and determine future action

Cabinet Mountains Augmentation Test Criteria

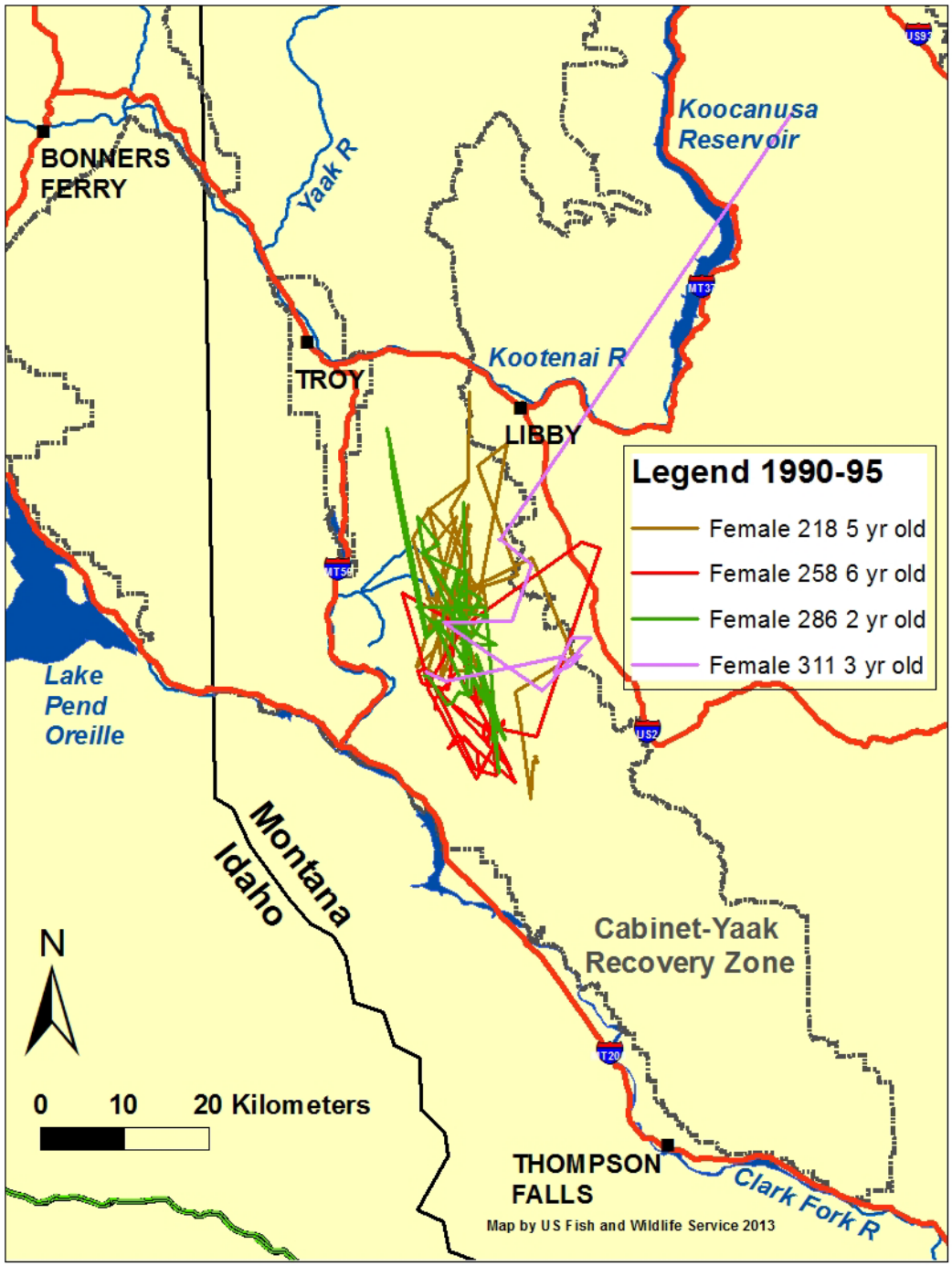
- FWS will conduct test
- Bears will be independent females
- Bears must have no history of human conflicts
- Bears will be backcountry animals
- Bears will be moved in mid-summer

Success Criteria for Test of Augmentation

- TRANSPLANTS MUST STAY WITHIN THE TARGET AREA FOR AT LEAST ONE YEAR
- TRANSPLANTS SHOULD ULTIMATELY REPRODUCE WITH NATIVE MALES

Test Results

- Bears captured in NF of Flathead River in SE BC by USFWS
- 3 of 4 female bears remained in target area for at least 1 year (VHF Telemetry)
- 1 bear left target area, but was captured and returned
- One bear produced a cub but both died
- All bears lost radio collars by 1996
- Trapping and hair snag from 1997-2004



HAIR SNAGGING FOR GENETIC ANALYSIS

2004 – identify bear 286 as present and she had reproduced

Kasworm, W. F., M. F. Proctor, C. Servheen, and D. Paetkau. 2007. Success of grizzly bear population augmentation in northwest Montana. Journal of Wildlife Management 71:1261-1266

Phase Two of Population Augmentation, 2005

- Convene stakeholders committee to discuss results
- Augmentation became a cooperative effort with MFWP capturing animals in the Flathead River drainage and USFWS monitoring animals
- Since 2005, eighteen additional bears added to the Cabinet Mountains (10 Females, 8 Males)

Cabinet Mountains Grizzly Bear Augmentation

- Add 22 bears since 1990 (14 females and 8 males)
- 8 bears left the target area, but 3 returned
- 6 bears are known dead (2 natural, train, illegal, mis-id, defense)
- 3 females and 2 males are known to have reproduced

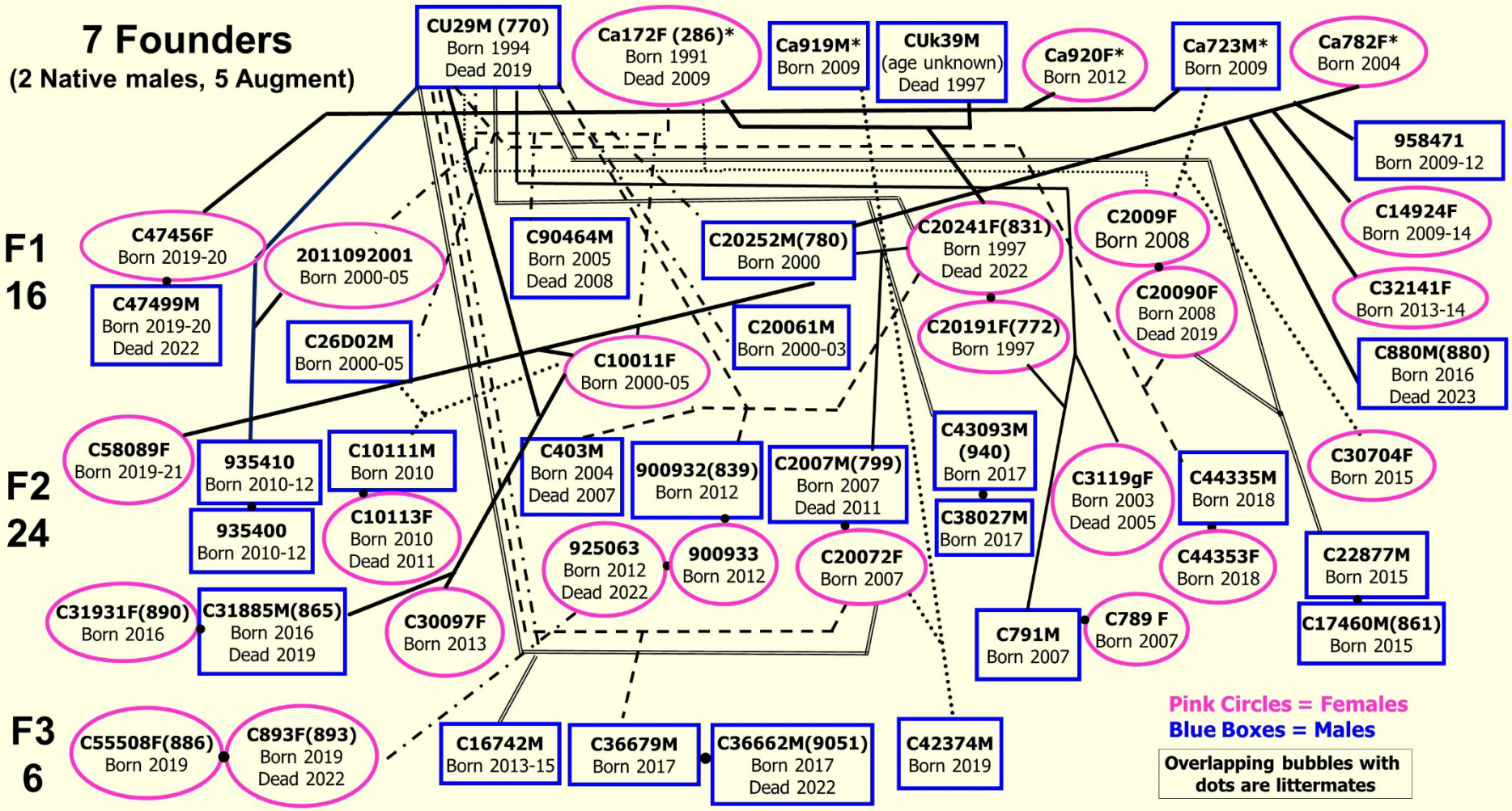
Genetic Sampling

- Hair samples from captures, rub trees and corrals with cameras
- We get species, sex, individual genotype, and parentage
- Document gene flow and effective linkage in support of recovery for both Cabinet-Yaak and Selkirk

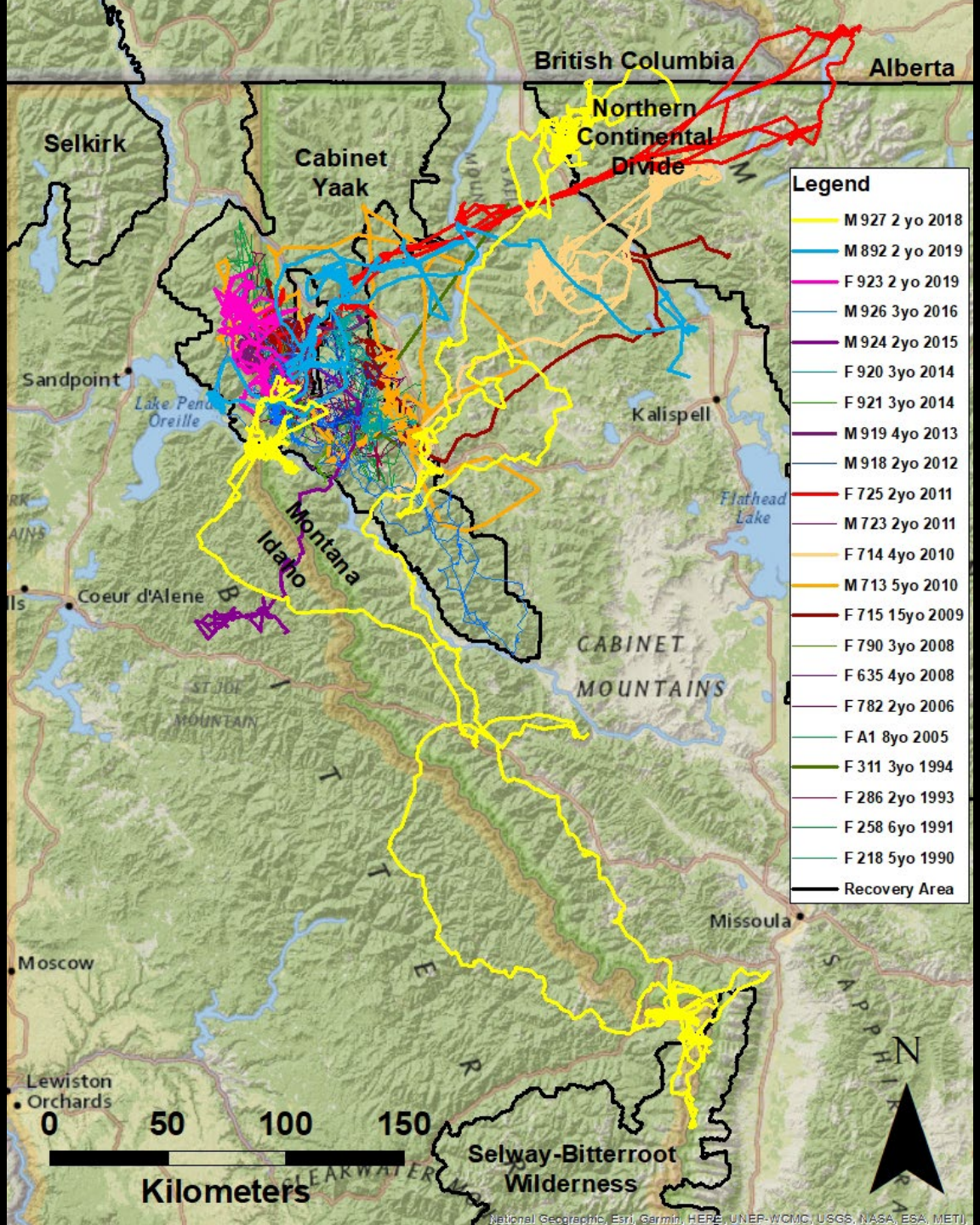
Augmentation Grizzly Bear DNA Family Tree for the Cabinet Mountains, 1990-2023

Bears CU29M and CUk39M are Native Cabinet Mountains Males identified prior to Augmentation

(* Augmentation bears released in the Cabinet Mountains: Bear 286 in 1993, Bear 782 in 2006, Bear 723 in 2011, Bear 919 in 2013, Bear 920 in 2014)



Cabinet Mountains Grizzly Bear Augmentation 1990-2023



Augmentation Results

Should I stay or should I go?

- Eliminate 4 bears that died on study area in < one year
- Small sample N = 18
  11/18 stay = 61%
- Female vs Male ?
  7/10 F stay = 70%
  4/8 M stay =50%
- Younger bears more adaptable ?
  9 of 14 < 5 years old stay (64%)
  2 of 4 ≥ 5 years old stay (50%)
- More distance between capture and release ?
  11 that stay average 167 km
  7 that left average 139 km

Survival and Population Size

	Female Survival	Male Survival
First Year	0.60 (95% CI = 0.27-0.93, N = 14)	0.70 (95% CI = 0.36-1.0, N = 8)
Second Year	1.0 (N = 6)	1.0 (N = 3)
All Years	0.78 (95% CI = 0.61-0.95, N = 14)	0.77 (95% CI = 0.53-1.0, N = 8)

- Cabinets population ± 6 bears in 1990
- Current population 30-35

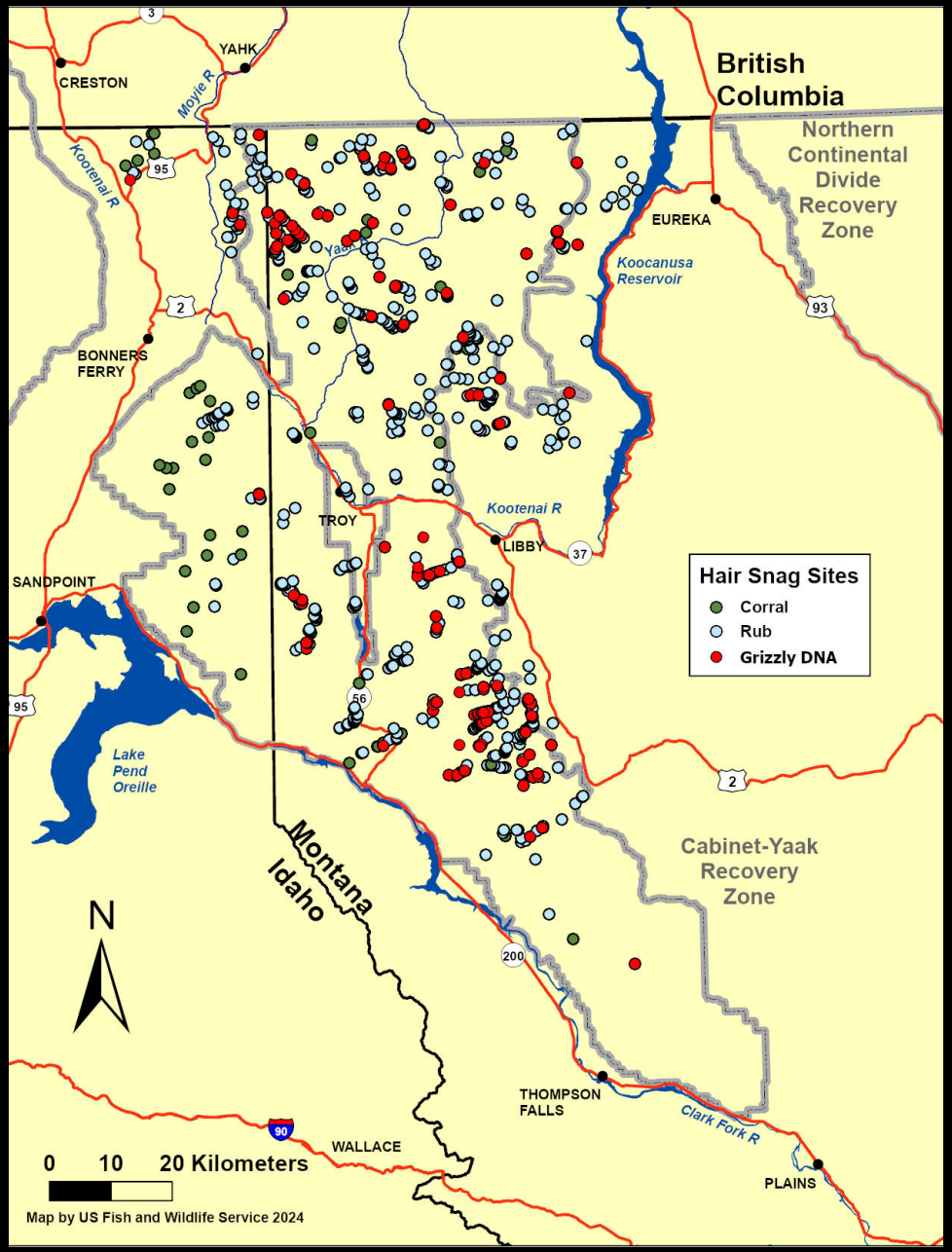
Conclusions

- Augmentation is the main reason we still have grizzly bears in the Cabinet Mountains
- We have not detected another bear getting to the Cabinets naturally and surviving to reproduce and recommend continuing the program at a slow but steady pace
- However : They don’t all stay where you put them and they don’t all live

2022 Cabinet-Yaak Hair Snagging for Genetic Monitoring

- 821 Rub sites visited 3-4 times
  - 127 Corrals sampled
  - Opportunistic samples
  - Trail camera photos
  - 55 individuals identified
- 29 Cabinets (13 F, 11 M, 5 Unk)
  - 28 Yaak (9 F, 15 M, 4 Unk)

- 2021 - 49 individuals
- 2020 – 45 individuals
- 2019 – 50 individuals

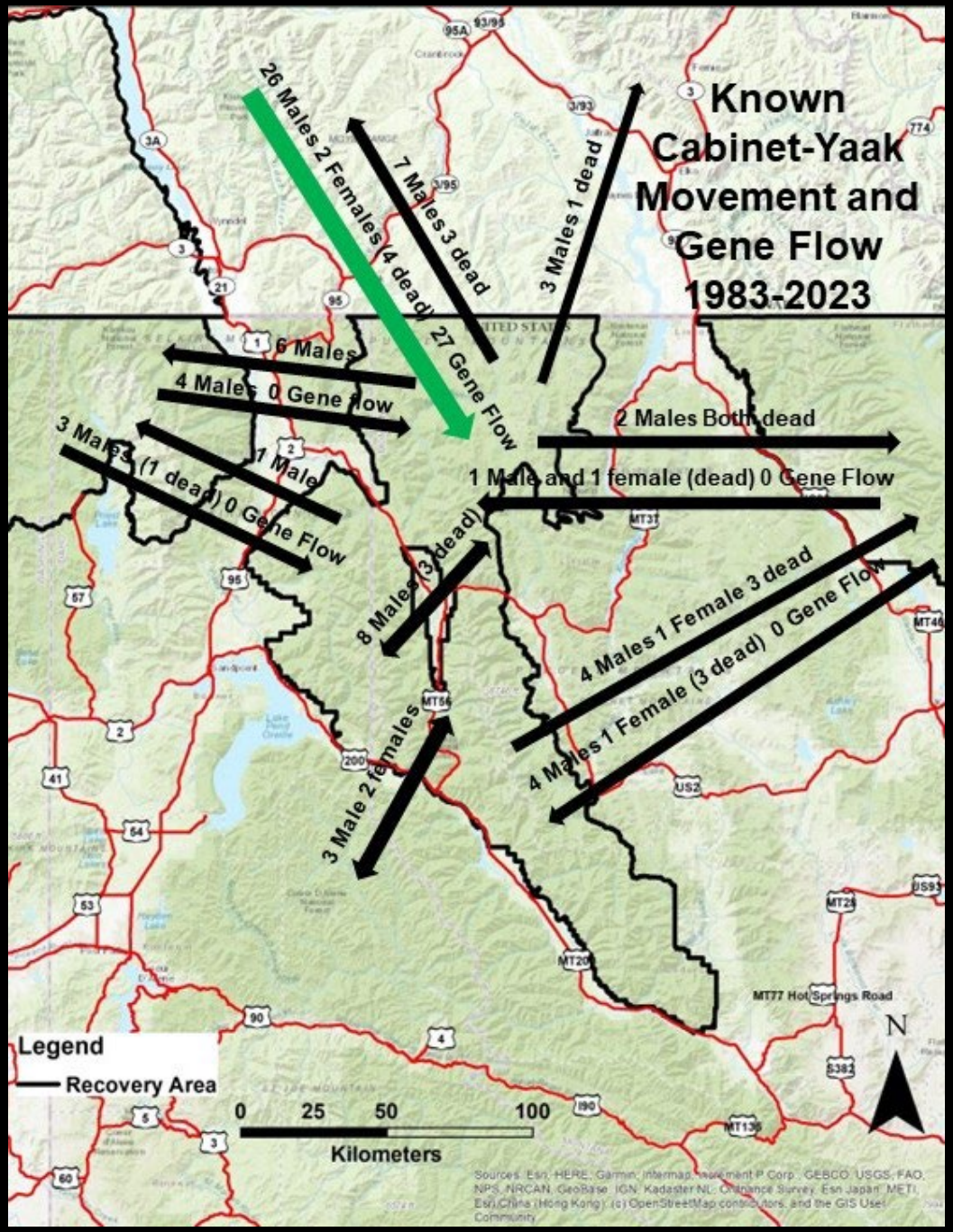


CYE Vital Rates from collared bears

Adult female survival = 0.924
Subadult female survival = 0.874
Yearling survival = 0.946
Cub survival = 0.652
First Age of reproduction = 6.3
Mean litter size = 2.16
Mean inter-birth interval = 2.89 years
Reproductive rate = 0.380 females / year
Growth rate = 2.7%

Cabinet-Yaak Grizzly Bear Movements and Gene Flow 1983-2023

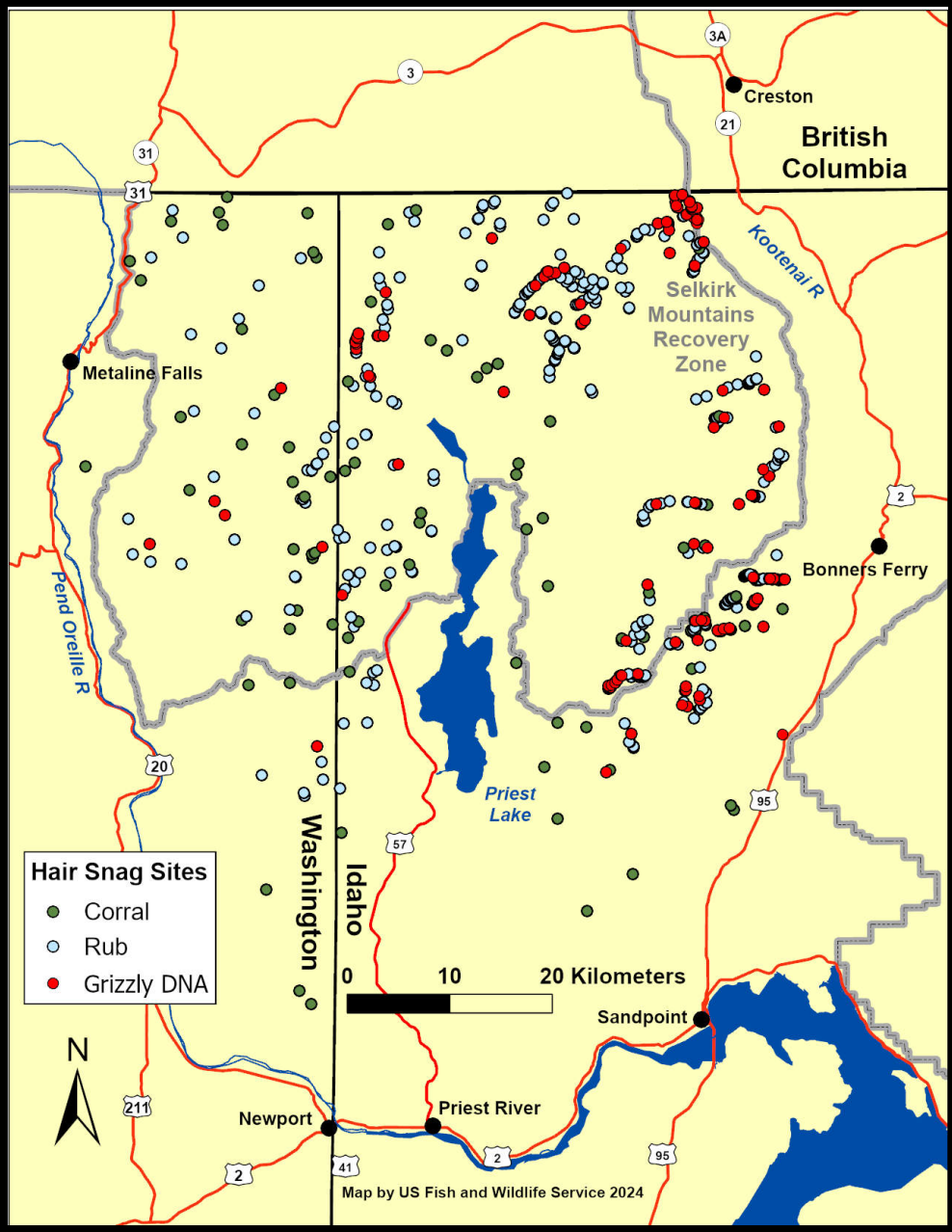
All data from telemetry, mortality, genetics involving maternity and paternity analysis



2022 Selkirk Hair Snagging for Genetic Monitoring

- 466 Rub sites visited 3-4 times
- 117 Corrals sampled, typically moved every month
- Opportunistic samples
- Trail camera photos
- 51 US Selkirks (17 F, 24 M, 10 Unk)

- 2021 – 49 individuals
- 2020 – 44 individuals
- 2019 – 44 idividuals

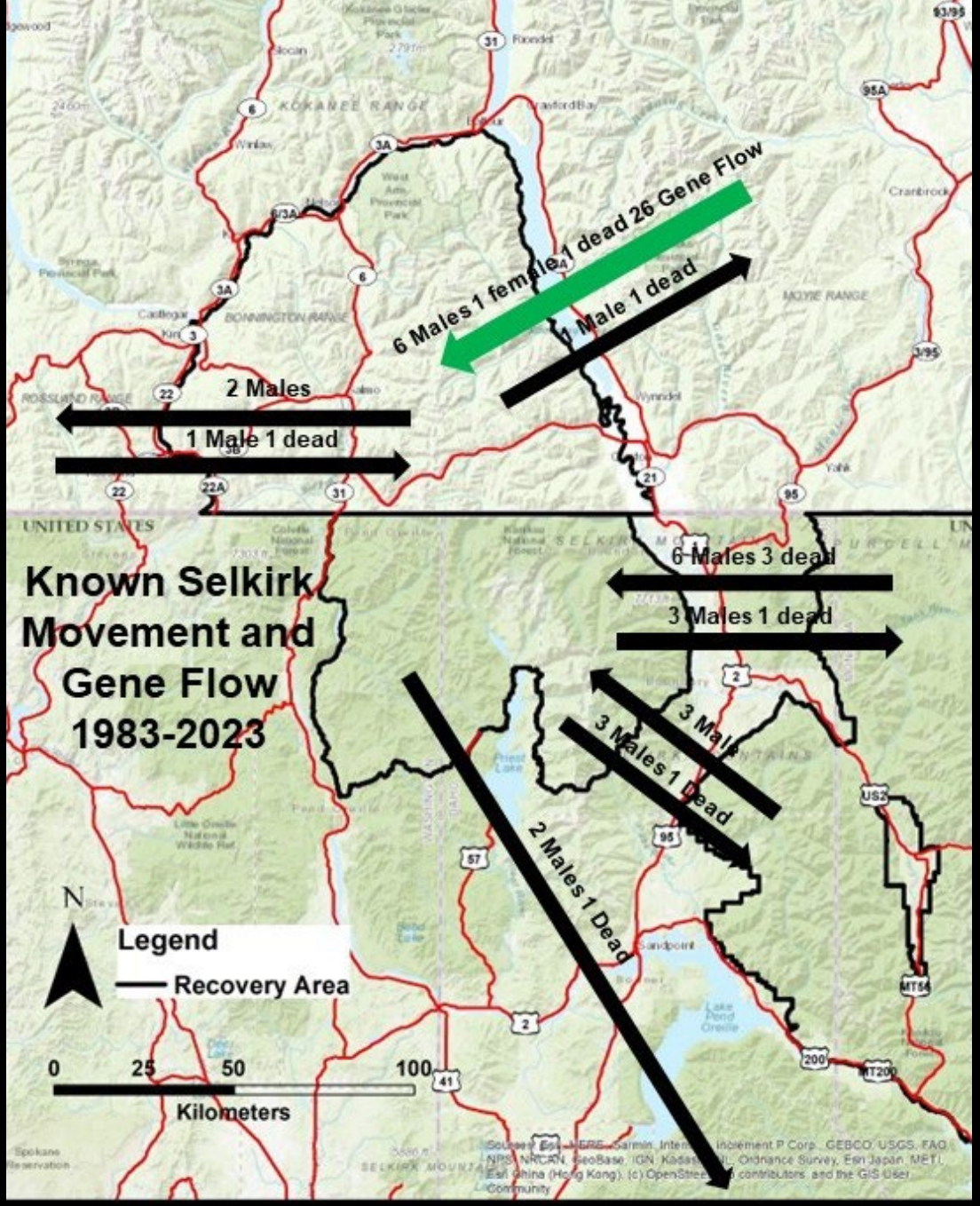


Selkirk Vital Rates from collared bears

Adult female survival = 0.916
Subadult female survival = 0.874
Yearling survival = 0.865
Cub survival = 0.886
First Age of reproduction = 6.3
Mean litter size = 2.19
Mean inter-birth interval = 3.46 years
Reproductive rate = 0.320 females / year
Annual growth rate = 2.5%

Cabinet-Yaak Grizzly Bear Movements and Gene Flow 1983-2023

All data from telemetry, mortality, genetics involving maternity and paternity analysis



THANK YOU, QUESTIONS?

Reports found at: **https://igbconline.org/committees/selkirk/**

We wish to extend a special thanks to the citizens of the province of British Columbia for allowing us to remove grizzly bears from the Flathead River drainage to augment populations in the Cabinet Mountains.

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- **M. Burcham**