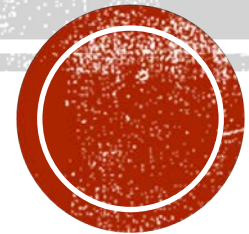


AMERICAN BULLFROG

LITHOBATES CATESBEIANUS

Kootenay Boundary Program Overview - 2020





INVADER ALERT

- Native Range – Mississippi watershed and eastern seaboard
- Introduced population incursion into BC from Washington and Idaho
 - Nelway & Creston
- Use of connected wetland & riparian habitats for migration
- Population control efforts occurring since 2016



CUISINE CAUSING COLLAPSE

- Introduced throughout western USA by settlers as game species
- Failed captive rearing for restaurants in Lower Mainland, Vancouver Island – fully established since mid 1900's
- Kootenay River Valley Incursion
 - Flowing north from populations in Idaho Panhandle
 - Established for at least a decade

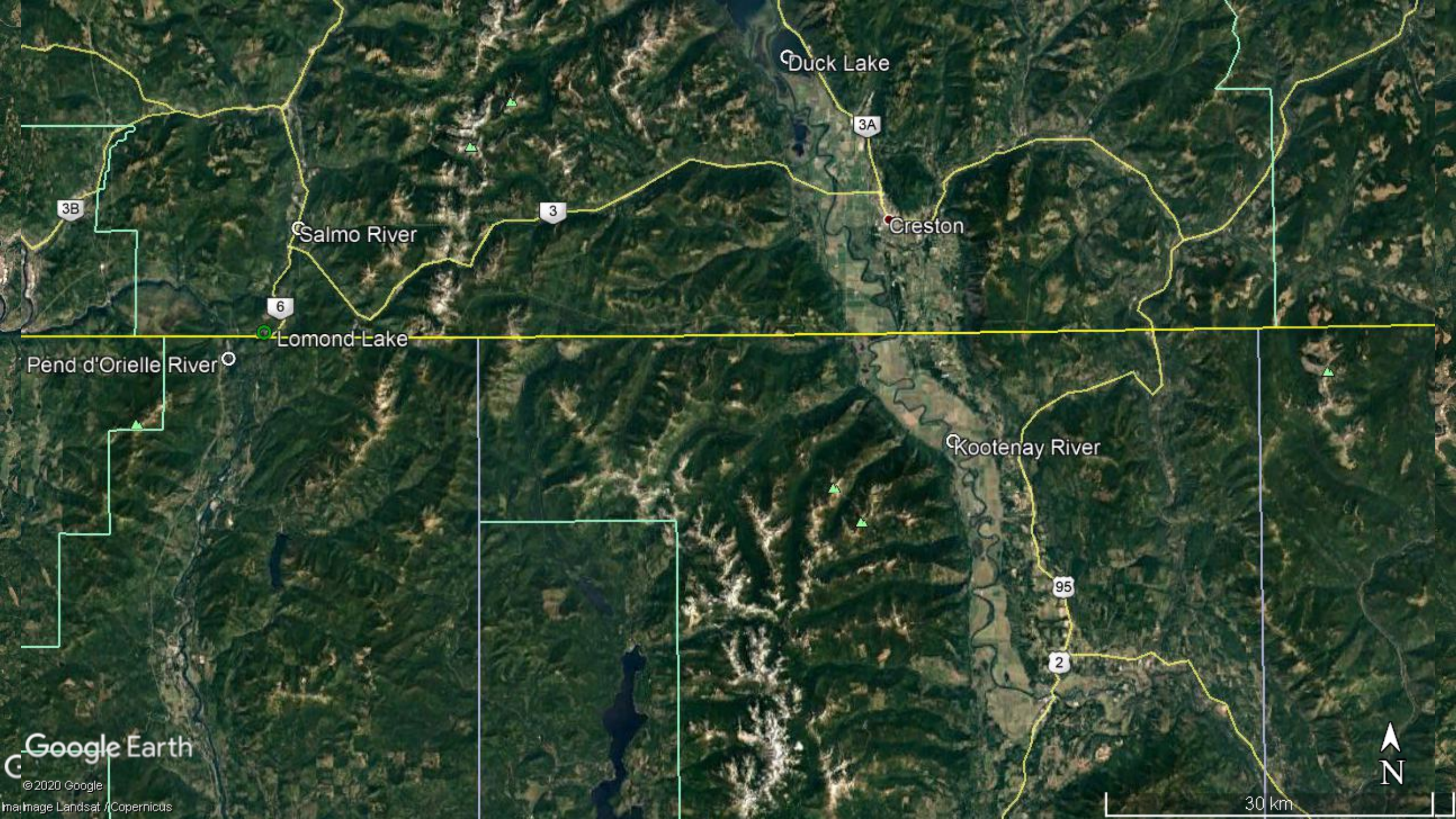


INVASIVE SPREAD — ENDANGERED DECLINE



- High risk threat to NLF recovery in Creston
 - Direct predation
 - Resource Competition
 - Disease Spread – Chytrid vector
- EDRR Species – Protocols applied
- Will reduce herpetofauna diversity if allowed to establish
 - On “Top 100 Worst Invasive Species” list





Duck Lake

3A

3B

Salmo River

3

Creston

6

Lomond Lake

Pênd d'Orielle River

Kootenay River

95

2

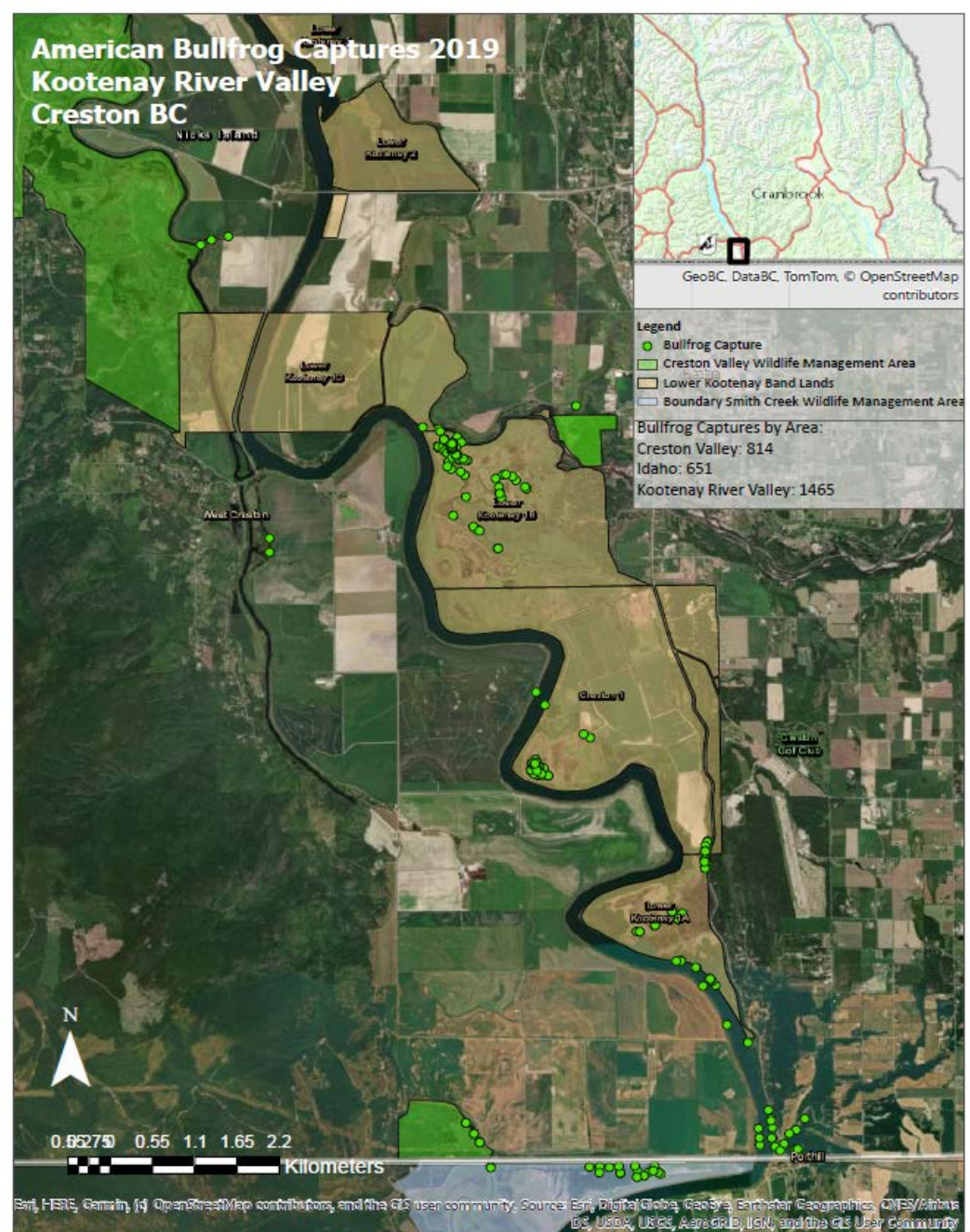
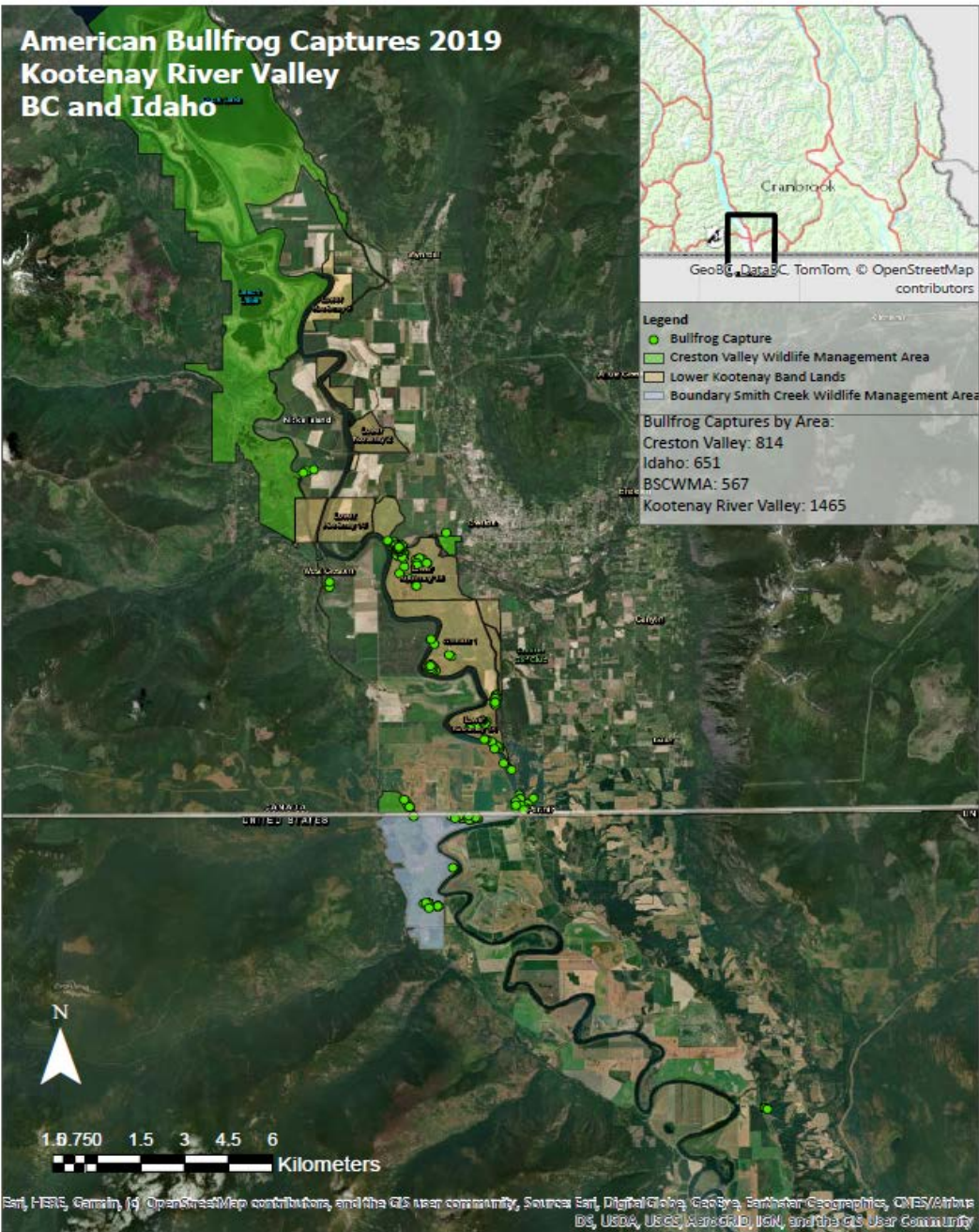
Google Earth

© 2020 Google

Imagery Landsat / Copernicus

N

30 km



SURVEY METHODS

- Daytime Recce – site assessments
- Visual Encounter Surveys – eyeshine
 - Boat and overland travel
- Acoustic Monitoring – Song Meters + Kaleidoscope Clustering
- Passive Trapping – Fyke net, pitfall, minnow, custom traps
- Conservation K9 – surveillance – 2020 proof of concept
- eDNA – backburner tool
- Telemetry - potentially

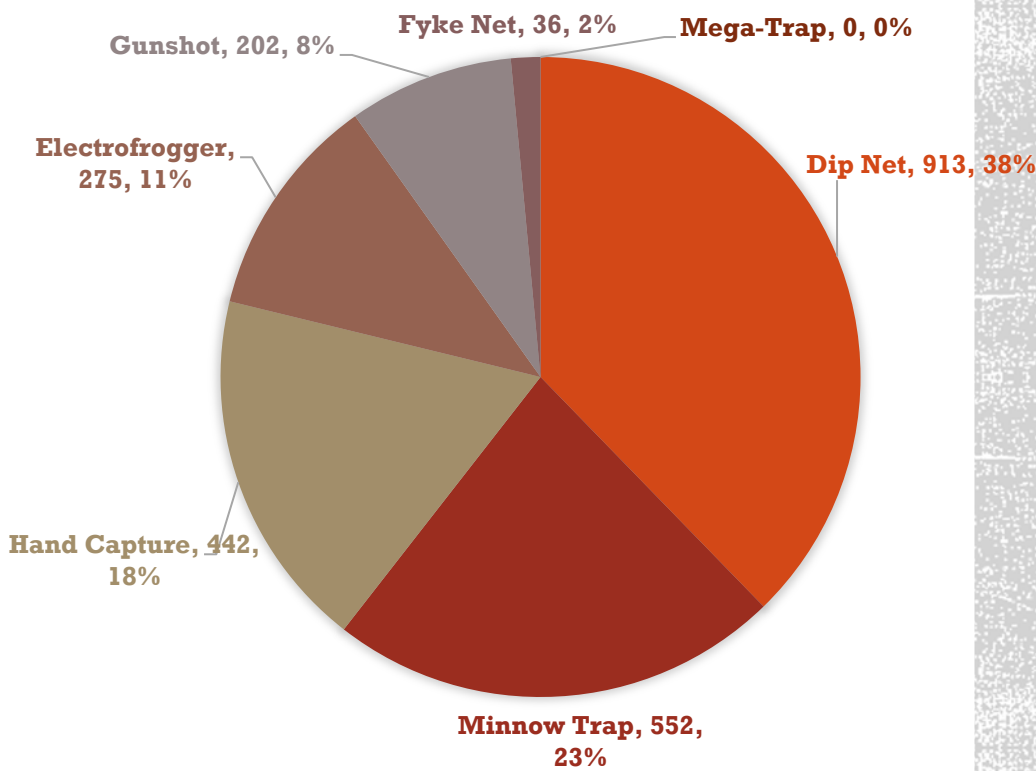






Capture Methods

TOTAL CAPTURES X METHOD 2018 - 2020



Capture Method	Total
Dip Net	913
Minnow Trap	552
Hand Capture	442
Electrofrogger	275
Gunshot	202
Fyke Net	36
Mega-Trap	0





EFFORT AND RESULTS

Year	Total Surveys	Surveys w/ LICA Caught	% of Surveys w/ LICA Caught
2018	67	20	30%
2019	94	43	45%
2020	171	59	34%



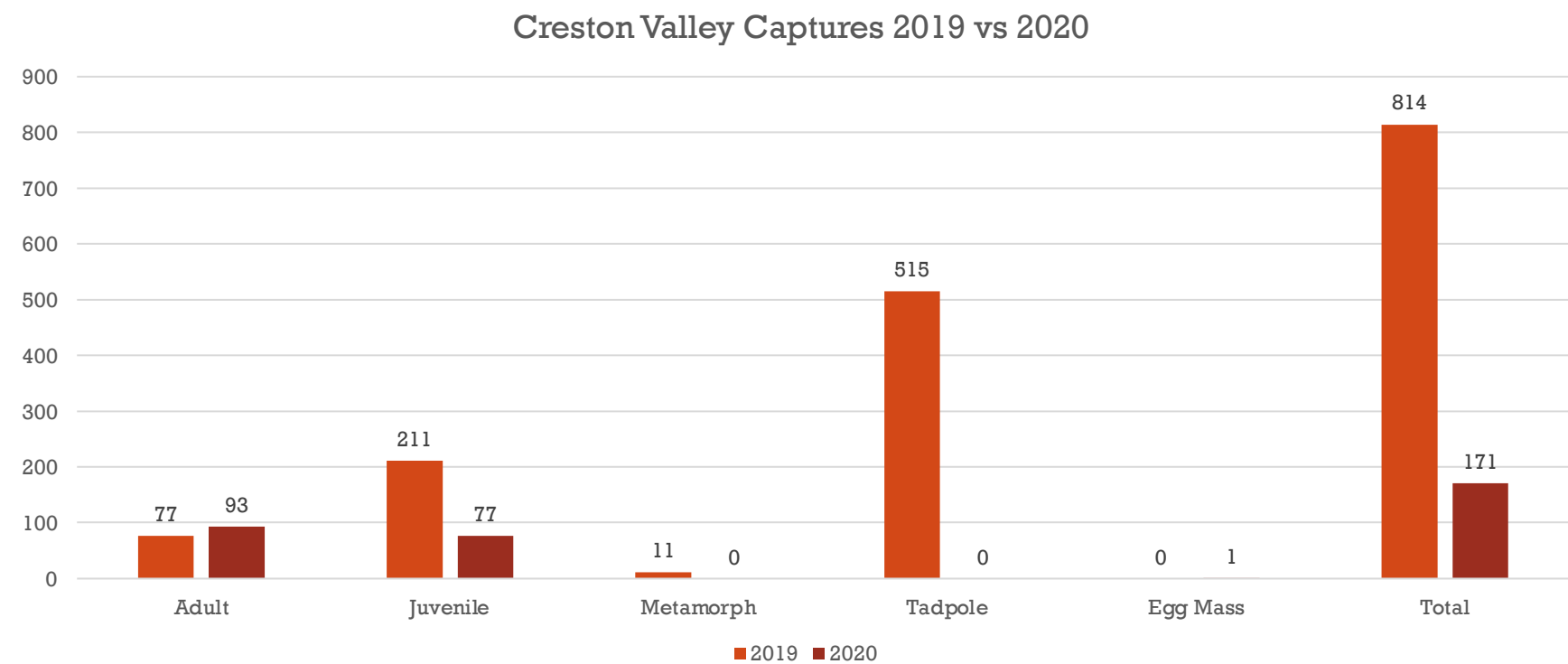
KRV INTER-YEAR BULLFROG CAPTURES

Year	Adult	Juvenile	Metamorph	Tadpole	Egg Mass	Total
2016	5	0	0	0	0	5
2017	14	2	0	0	0	16
2018	7	173	238	36	0	454
2019	181	517	251	515	0	1,464
2020	93	77	0	0	1	171
					Total Captures	2,117



CRESTON CAPTURES — 2019 VS 2020

Year	Adult	Juvenile	Metamorph	Tadpole	Egg Mass	Total
2019	77	211	11	515	0	814
2020	93	77	0	0	1	171



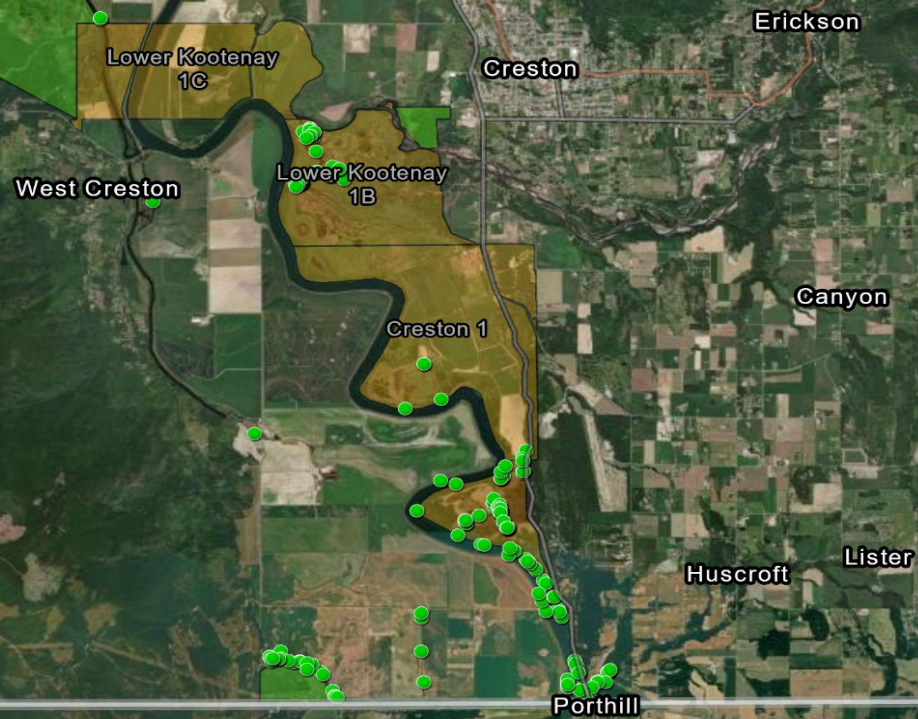
2020 Bullfrog Captures - Creston BC

Legend

- Bullfrog Capture
- Conservation Lands - Creston Valley
- LKB Lands Creston

Captures x Life stage

Adult: 93
 Juvenile: 77
 Metamorph: 0
 Tadpole: 0
 Egg mass: 1
Total: 171



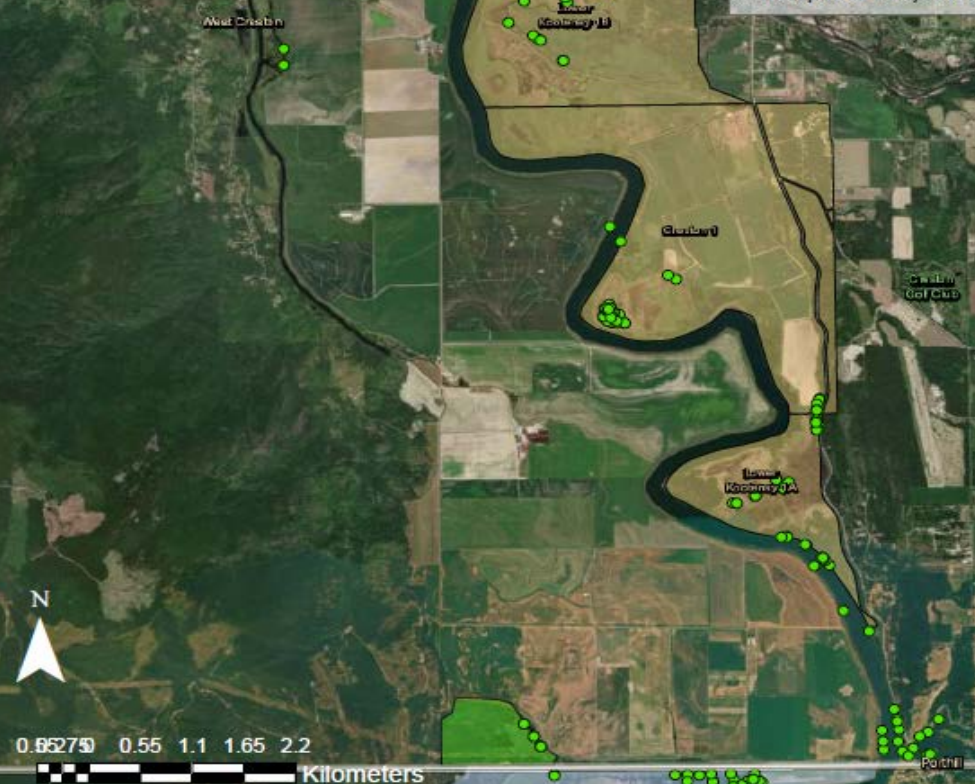
Earthstar Geographics, Esri, HERE, Garmin, MET/NASA, USGS, EPA, NPS, USDA, NRC, Parks Canada

American Bullfrog Captures 2019 Kootenay River Valley Creston BC

Legend

- Bullfrog Capture
- Creston Valley Wildlife Management Area
- Lower Kootenay Band Lands
- Boundary Smith Creek Wildlife Management Area

Bullfrog Captures by Area:
 Creston Valley: 814
 Idaho: 651
 Kootenay River Valley: 1465



Esri, HERE, Garmin, OpenStreetMap contributors, and the GIS user community, Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



2020 RESULTS

- More adult captures
- Increased Kootenay River effort over previous years
- No observed successful breeding
 - 2019 control pressure
 - Harsh overwintering conditions
 - Habitat alteration in Yaqin Nukiy
- Similar distribution across landscape
- No new sites detected

2021 PLANS

- Increase surveillance with K9 team
- Increase pressure in Kootenay River
- Develop telemetry for tracking movement – from US in Can
- Figure out how to trap
 - Warm water lure
 - Baits and attractants
- Reduced staff – increased efficiency
- Get Idaho (public?) catching frogs

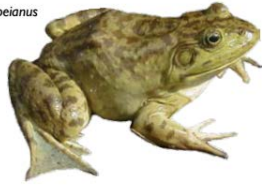


PARTNERSHIPS AND COLLABORATIONS

- CKISS started efforts in 2016
 - Passed torch to FLNRORD in 2018
- LA secured recoverable funding for coordinator and staff for 2-4 years
- Ktunaxa Nation Council and Lower Kootenay Band key partners
 - AFSAR/site knowledge/access
- CKISS ongoing partner for accessing grant based funding
- Terry Anderson
- Other regional orgs conducting control efforts
 - ie Fraser Valley Conservancy
- IDFG – Key partner for transboundary control efforts
 - COVID stalled 2020 work in Idaho
 - Trained some staff in 2019
- Kootenay Tribes of Idaho
 - Increasing interest to contribute to KRV control efforts
 - Trained some staff in 2019
- Kalispell Tribes
 - Increasing interest to contribute to Pend d'Orielle control efforts
 - Trained some staff in 2019
- WDFW – grant admin
- USGS – a new one



Invasive American Bullfrog
Lithobates catesbeianus
5 to 20 cm



mapping the spread of **invasive frogs**

INVADER ALERT

introduced frogs displace native frogs and spread amphibian diseases

Native Columbia Spotted Frog
Rana luteiventris
4 to 10 cm



Native Western Toad
Anaxyrus boreas

Native Pacific Chorus Frog
Pseudacris regilla
2 to 5 cm



IDENTIFICATION KEY FROGS AND TOADS OF INTERIOR BC



Does the frog have parotoid glands behind the eyes and tough warts on the skin?
YES **Western Toad** **YES**
Anaxyrus boreas
NO



Does the frog have a prominent black facial mask and adhesive toe pads on all toes?
YES **Pacific Treefrog** **YES**
Pseudacris regilla
NO



Does the frog have irregular black spots on the head, back, and legs, and two parallel folds of skin running from head to tail?
YES **Columbia Spotted Frog** **YES**
Rana luteiventris
NO



Does the frog have a skin fold following the shape of the large, prominent ear membrane?
YES **American Bullfrog** **YES**
Lithobates catesbeianus

More Bullfrog identification tips:

- Bullfrogs are large, robust frogs with brownish to olive green colouring.
- Ear membranes are larger than diameter of the eye.
- There are no dorsal folds (skin folds running down the back).
- Bullfrog males have bright yellow throats during the breeding season.
- Male mating call is a distinctive loud rasping honk. Listen at: www.ckiss.ca/species/american-bullfrog/



FUNDING PROVIDED BY THE
PROVINCE OF BRITISH COLUMBIA
AND THE HABITAT STEWARDSHIP
PROGRAM

Revised 2016
H042478/0001 / MARCH 2017

Bullfrogs are Bullies! Les ouaouarons sont des brutes!

The American Bullfrog is one of the 100 worst invasive species worldwide!
Le ouaouaron américain fait partie des 100 pires espèces envahissantes au monde!

Why are Bullfrogs a problem?



Pourquoi les ouaouarons sont-ils un problème?



Bullfrogs can carry and spread chytrid fungus which is deadly to our native amphibian populations.

How do I know it's a Bullfrog?



Comment reconnaître un ouaouaron?



Large frog (over 10cm)



Mating call is a loud "bwa bwa" sound, heard in the spring & summer



Adult Bullfrogs can grow up to 20cm in length



Adult Bullfrogs can grow up to 20cm in length



Adult Bullfrogs can grow up to 20cm in length



Adult Bullfrogs can grow up to 20cm in length



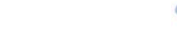
Adult Bullfrogs can grow up to 20cm in length



Adult Bullfrogs can grow up to 20cm in length



Adult Bullfrogs can grow up to 20cm in length



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Adult Bullfrogs can grow up to 20cm in length



Adult Bullfrogs can grow up to 20cm in length

01 BULLFROG BULLY

You'll listen loud and clear, now. Us frogs ain't goin' nowhere. Ya hear? By Vince Hempall

Isn't it ironic, a species as destructive as *Homo sapiens* is worried about all of "our" destructive things? I'm only an American bullfrog, *Lithobates catesbeianus* to be all science like. Originally from Mississippi. And yeah, I'm a hungry voracious most all the time. Some might even call me fixated. Or "invasive." Yesterday, I managed to cram an entire duckling into my mouth. Mmmmm. But, hey, I gotta look after me an' my kin. Can I help it if I got so many? My missus laid 20,000 eggs this past season alone. That's a lot of tadpoles to feed, which is why we gotta make our way across the border from Idaho into British Columbia to keep on feedin', right?

But y'all are making it darn hard. Two years you been huntin' us. You got your Central Kootenay Invasive Species Society involved. The Kootenay Nation. And that guy Matt Morrison from the Ministry of Forests, Lands, Natural Resource Operations and Rural Development and whatnot. This last year he headed up the 10-person posse dedicated to keepin' us from enterin' Canada. You got scientists spotlighting us all summer long, catching us with their nets, killing us with their electro-shockers and air rifles. I heard one team wiped out 200 of us in one night! All to protect your precious northern leopard frogs in the Creston Valley Wildlife Management Area. Those endangered polliwogs are scrawny, toppin' out at 22 grams. I bet they taste good. I'm nearin' a kilo, myself.

Morrison says humans were the ones who introduced us to Idaho in the first place, 'cause frog legs are a delicacy or some such. Well, I declare, if y'all brought us here to eat us, then what's the harm in us doin' a little chowin' down ourselves? Morrison says me and my kind will "eat anything that fits in [our] mouths: fish, insects, bats mice, shrews, voles, other frogs." Sounds 'bout right. Bwp.

02 STICKING TO

Antler collecting is a thing. A series By Dave Quinn



When antlers begin to drop from animals everything to search for them: they drive hundreds of kilometres off trail, through steep, rocky terrain and sacrifice time w the term "shed" refers to an antler found being dropped, or shed, by a wild ungulate permanent horns found on goats, sheep grow under a blood-rich blanket of velvet off for mating season, then fall off and g

Among collector tribes, shedders are dedicated. Just check out Facebook's BC site, where, for example, you can find a fashionable Christmas tree made up of true addicts, shedders fill up entire out in their houses. "Many of our friends d Kimberly, British Columbia, shedder h is as simple as hiking your ass off to get gorgeous places, and the reward, when literally treasure to us." In early season, to their favourite zones with binoculars and spotting scopes to determine where animals are so they have a better chance of finding antlers later on. Moose and caribou are the first to drop, with big bulls shedding around Christmas, followed by whitetails in January, and mule deer through February into March. Finally, in April, the prized elk antlers fall and a real frenzy begins. Responsible shedders leave small or old antlers behind so small mammals can gnaw on them as a crucial source of late-winter calcium and other minerals.

The holy grail of shedding is the matched set, where a large bull elk, mule deer, or moose has dropped both antlers together. Antlers with extra points or "stickers," as they are called, or with funky shapes are also sought after. Even better is an exceptionally huge one, which proves that, in this case, size matters.

UNWANTED



INVASIVE AMERICAN BULLFROG

DISTINGUISHING FEATURES

- Large Greenish Brown Frog (up to 750 grams)
- Prominent Circular Eardrum
- Males have a Bright Yellow Throat when Breeding
- No Stripe or Skin Fold Down Back
- Distinctive Mating Call- scan below to listen

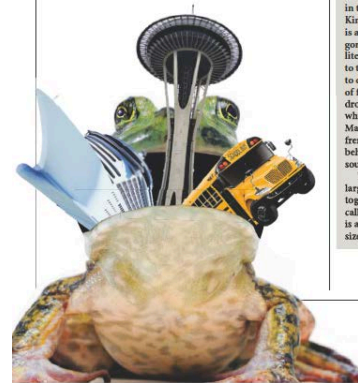
REPORT SIGHTINGS

Phone: 1-250-354-6333
Email: kootenaybullfrog@gov.bc.ca



If possible, obtain photos
Do not harm, capture or transport wildlife.

www.ckiss.ca




QUESTIONS?





Bullfrog Identification:

Males:

- Male calling 
- Yellow throat during breeding: late June – mid August
- Large ear membrane
 - Twice the size of the eyeball



Bullfrog Identification Cont'd

Females/General ID:

- Skin fold from eyeball following shape of eardrum (tympanum)
- Brownish to olive green in colour
- No dorsal ridge – 2 bony lines running down the back
 - Columbia spotted frogs have distinct dorsal ridge
- Grow to 500 grams +
 - Largest caught in Creston was 610 grams
- Live 7 – 9 years in the wild
- Reproduce in water 24-28 degrees Celsius



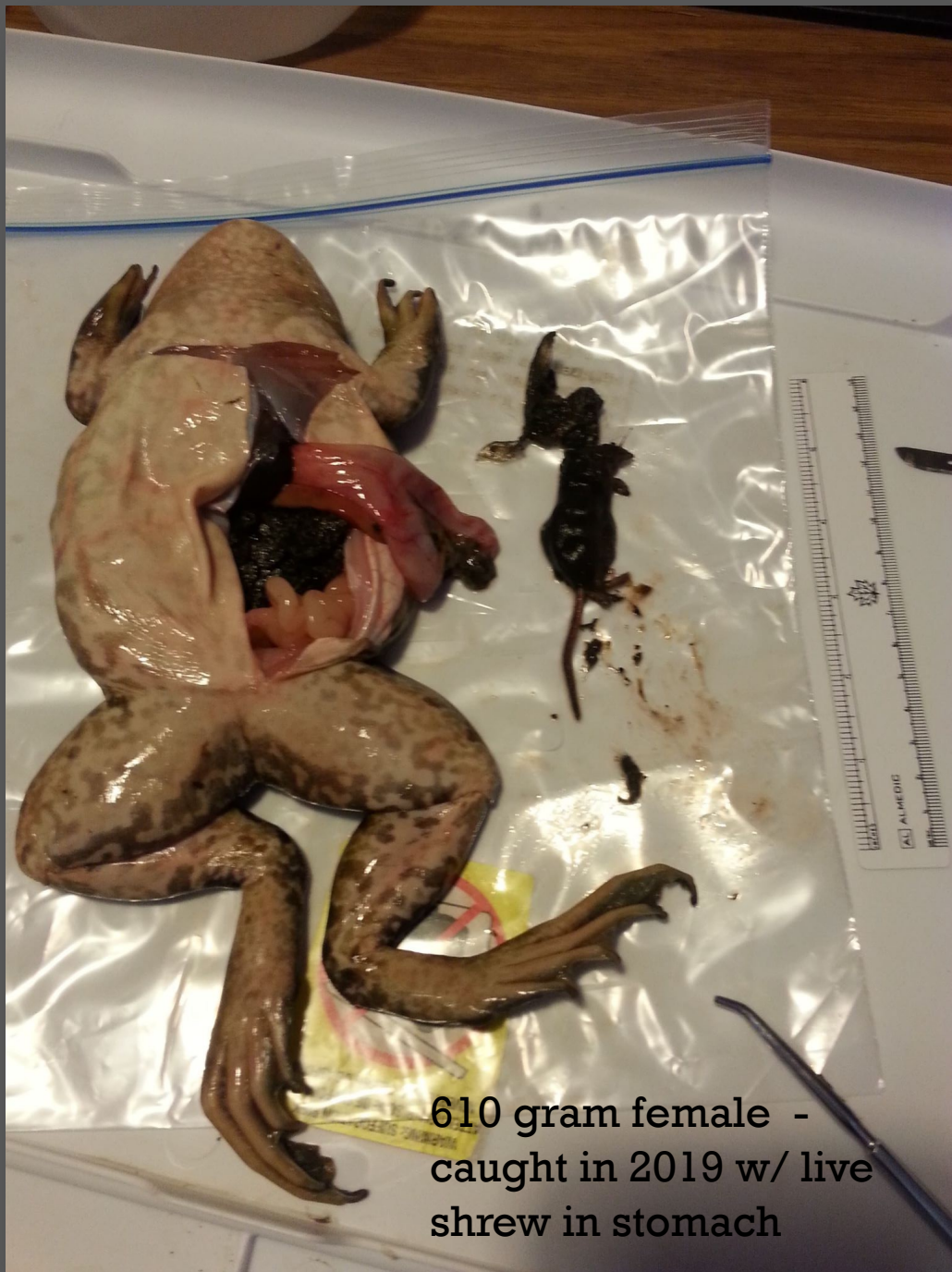
Tadpoles:

- Survival to adult is roughly 10%
- Golf ball sized – much larger than other tadpoles
- 2 years in tadpole life stage – but adaptable



Nets and traps work best for trapping tadpoles





610 gram female -
caught in 2019 w/ live
shrew in stomach

