Invasive fishes in the Pacific NorthWest: A Canadian perspective

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Outline of this talk:

1. Importance of fishing to BC, and invasive fishes
2. Control: Gill netting and angler incentive programs
3. Our Northern pike research
4. Other invasive fishes
5. Cross-border conclusions and action items

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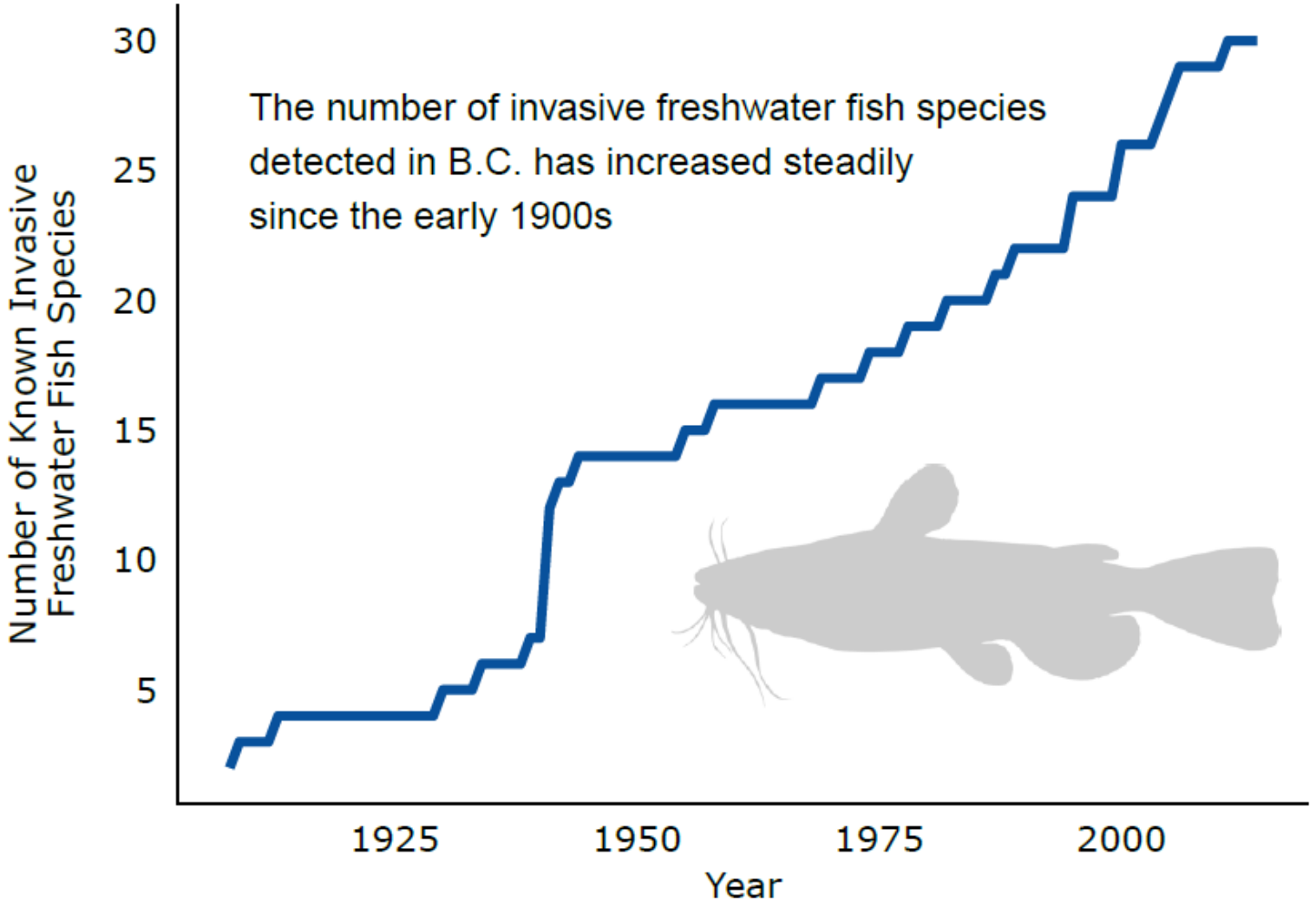
Questions: bheise@tru.ca

Source: Steve Maricle

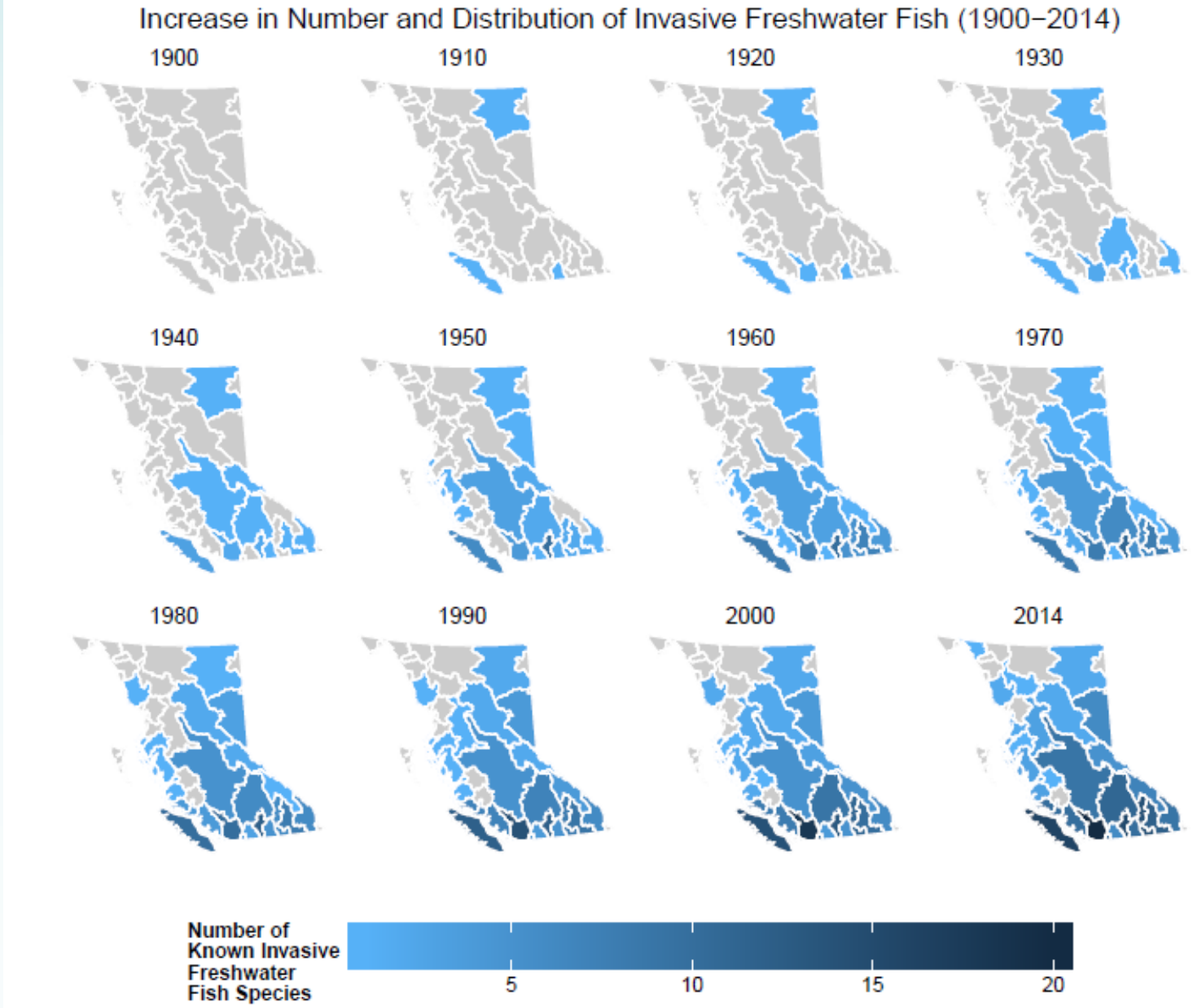
Photo: Matt Neufeld

Value of fisheries in BC

1. Freshwater sport: $957 000 000 (2013)
2. Salmon sport: $347 000 000 (2005)
3. Salmon commercial: $283 000 000 (2005)



Source: Environmental Reporting BC



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❷ LCR Pike Suppression Program

- In 2014, MFLNRO and Teck Metals Ltd. implemented the Invasive Northern Pike Suppression Program

- Program includes active removal of pike through gill-netting, and limited PIT tagging

- Gill-netting efforts in 2015-2017 focused in the Robson's Reach area immediately downstream of the Hugh L. Keenleyside Dam (2017=last year of funding)

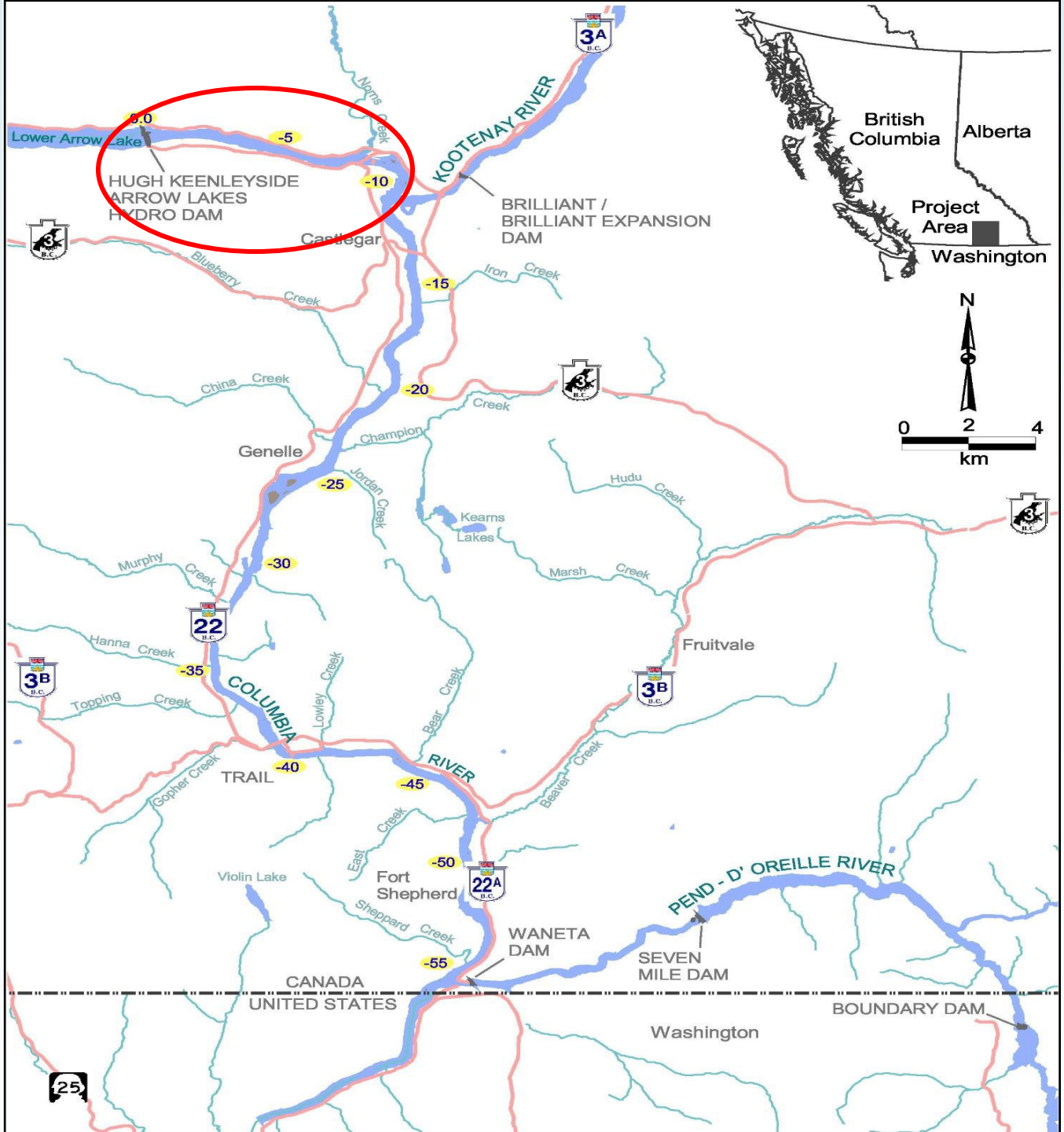

Lower Arrow Lake
HUGH KEENLEYSIDE
ARROW LAKES
HYDRO DAM
KOOTENAY RIVER
BRILLIANT /
BRILLIANT EXPANSION
DAM
Castlegar
Blueberry Creek
Iron Creek
China Creek
Champion Creek
Genelle
Jordan Creek
Kearns Lakes
Hudu Creek
Marsh Creek
Murphy Creek
Hanna Creek
Topping Creek
COLUMBIA RIVER
Lowley Creek
Bear Creek
Fruitvale
TRAIL
Gopher Creek
Beaver Creek
East Creek
Violin Lake
Fort Shepherd
Sheppard Creek
WANETA
DAM
SEVEN
MILE DAM
PEND - D' OREILLE RIVER
CANADA
UNITED STATES
Washington
BOUNDARY DAM
British Columbia
Alberta
Project Area
Washington
N
0 2 4
km


Photo Courtesy of Jeremy Baxter

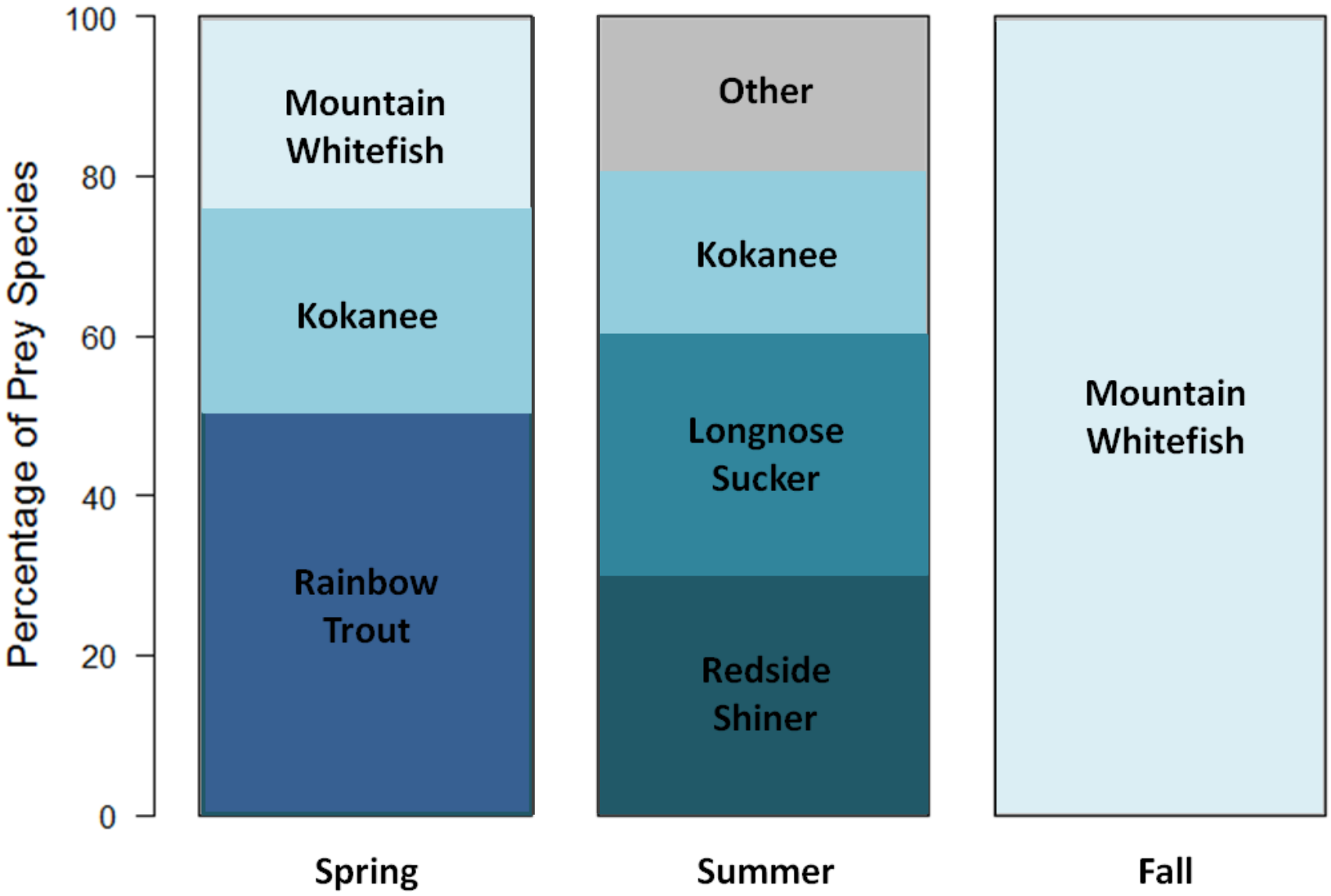

Photo Courtesy of Jeremy Baxter

Fishing policy in the Columbia River (angler incentive program)

- Regulations were changed from pike fishing being illegal, to fishing allowed, with no catch limits (and anglers encouraged to kill all pike caught)

- In 2014 and 2015 anglers were offered a reward for turning in pike heads (if that head contained a PIT tag)

Proportion of Prey Species by Season



Results of the Columbia Pike Suppression Program

Year	CPUE (#/hr/net)	Total catch	Mark-recapture est.
2014	0.19*	133	725 (478-2759)
2015	0.20	116	410 (151-670)
2016	0.19	39	107 (59-155)

*0.44 for May

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❸ Research conclusions

Dan Doutaz

1. Evidence of movement from the Pend d'Oreille to the Columbia River either through migration through dam or illegal transport (otolith microchemistry)

2. Spawning suspected to be occurring near Celgar Mill, using sunken debris and cover provided by logs

3. Movement of tagged pike limited to approximately 10 km range near Castlegar (acoustic telemetry)

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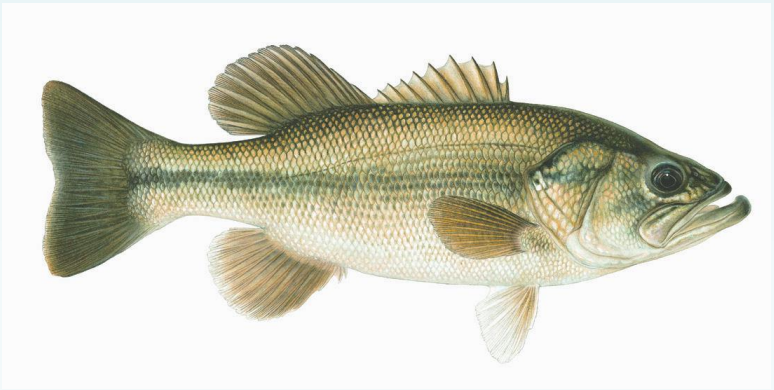
❹ Other invasive fishes in BC

Smallmouth bass

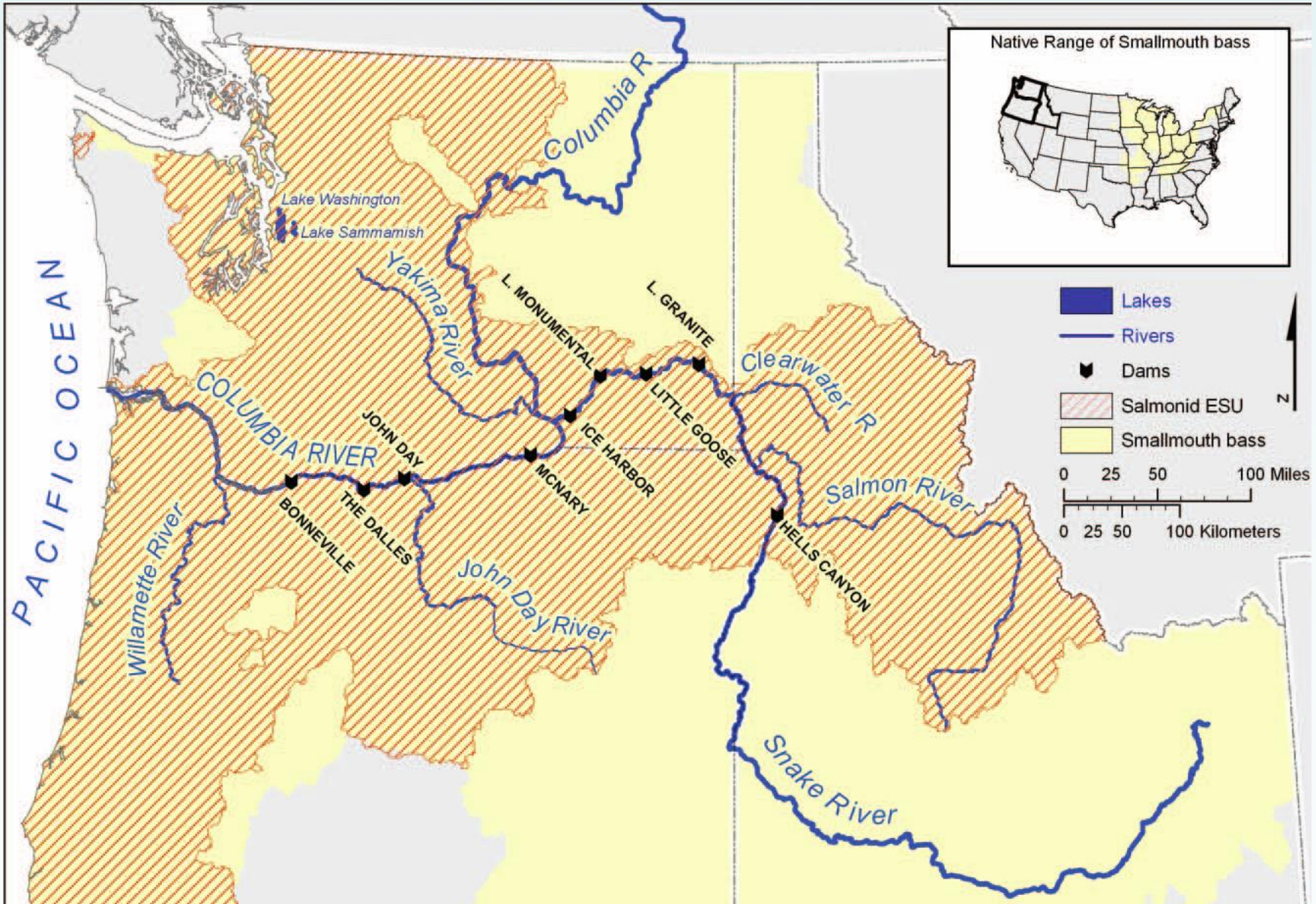


Largemouth bass

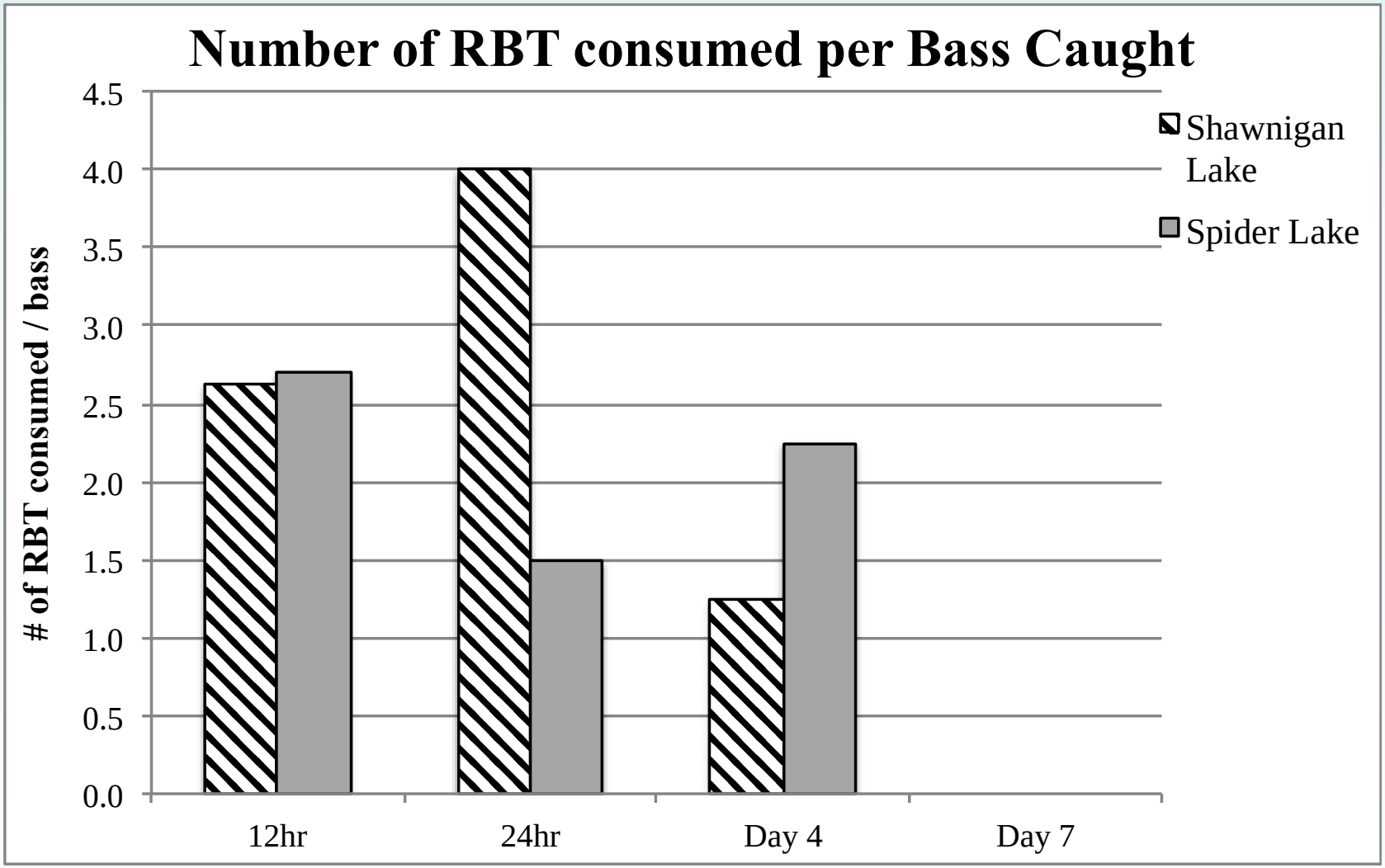
Walleye

Yellow perch

Overlap of evolutionary significant units (ESU) of salmon with that of smallmouth bass in the Columbia River system (Source: Carey et al. 2011)

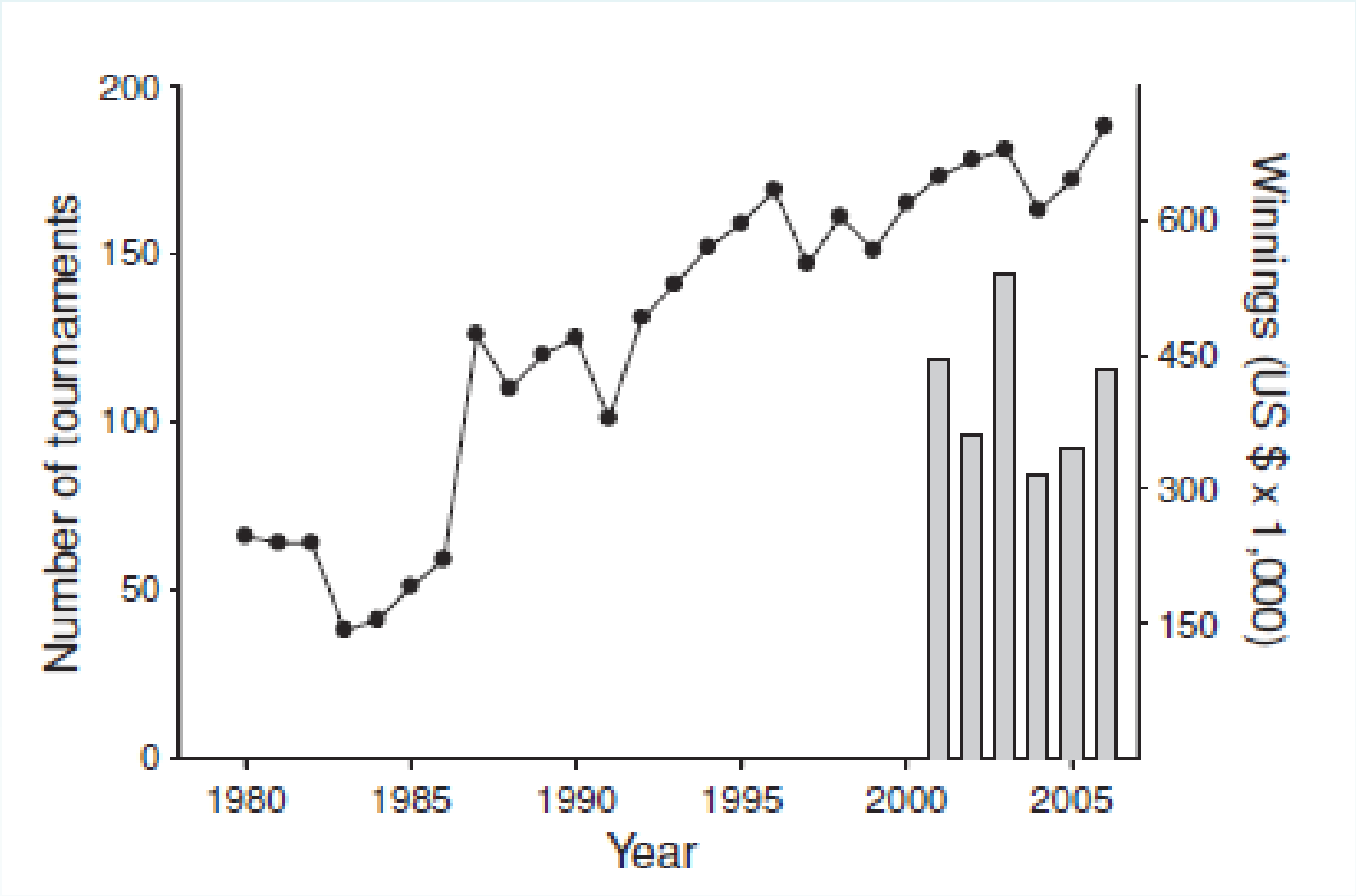


Rainbow trout stocking experiment on Vancouver Island



Source: Martina Beck M.Sc. 2013 U.Vic.

The number (dots) and prize money (bars) of bass tournaments in Washington state



Carey et al. 2011 Reviews Fish. Sci.

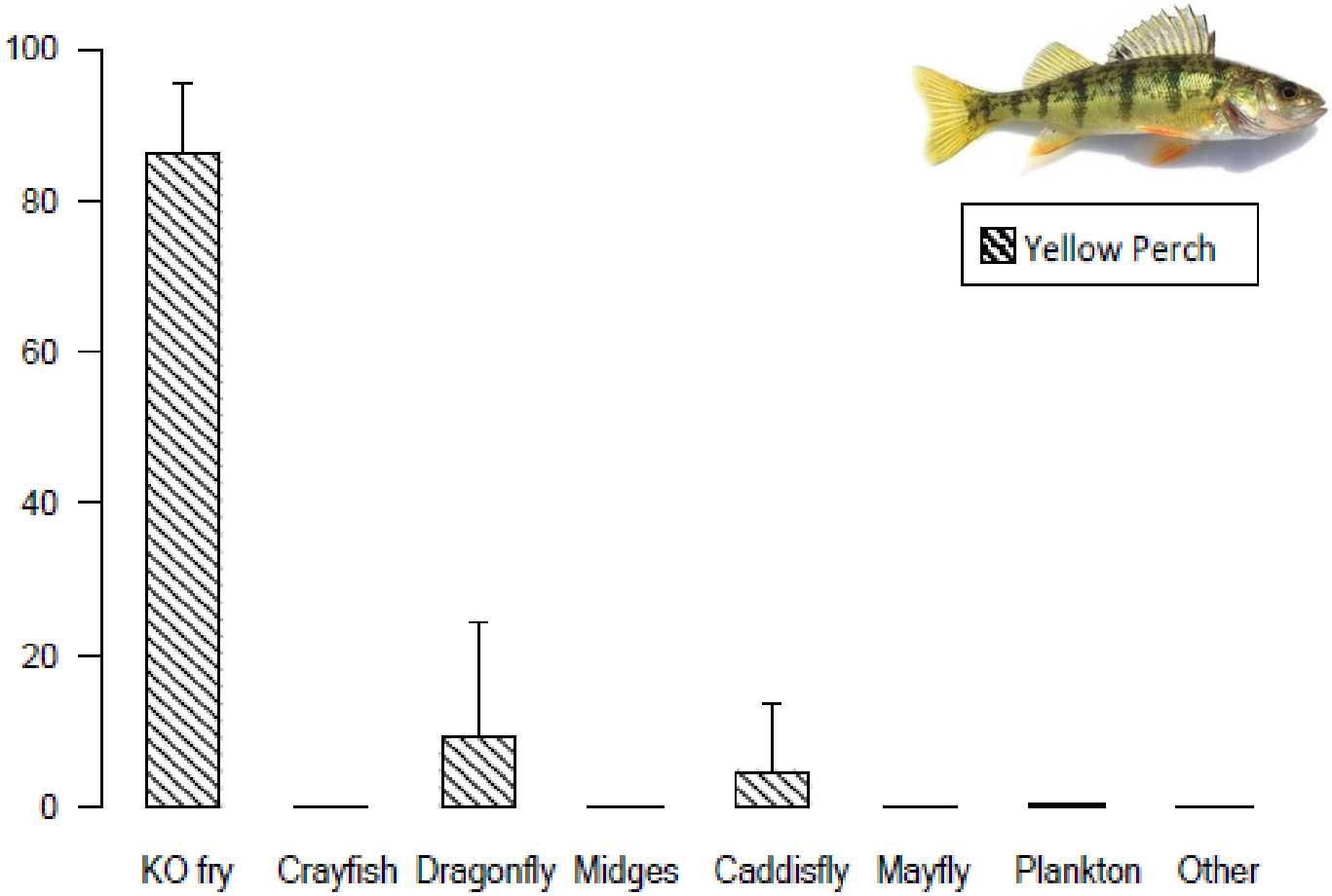


Figure 24. Trophic profile of the primary prey items (%E_i) in the diet of yellow perch (n=34) from Osoyoos Lake in the Okanagan during April 2012 sampling. Error bars represent 95% CI using bootstrap method.

Source: Martina Beck M.Sc. 2013 U.Vic.

Risk summary for these fishes

Species	Ecol. Consequence Small Water Bodies	Ecol. Consequence Large Water Bodies
Largemouth bass	Very High	Moderate
Smallmouth bass	Very High	High
Yellow perch	Very High	Medium
Northern pike	Very High	Very High
Walleye	High	High

Very high risk = Extirpation of native populations likely

Results from a DFO MoE risk assessment conducted in 2008

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❺ Cross-border conclusions and action items

1. Form PNWER cross-border Northern pike committee
2. PNWER-scale economic analysis of native fisheries and salmon/steelhead recovery investments at threat from Northern pike
3. Mandatory retention of Walleye, Smallmouth bass and Yellow perch caught in pike suppression programs
4. Increase focus on funding for Canadian and U.S. northern pike suppression programs, where the species is invasive