



# Invasive Animals and Beyond

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Provincial Government Update

Dominique Sigg, Matthias Herborg, Martina Beck



Ministry of  
Environment

**BC INTER-MINISTRY INVASIVE SPECIES WORKING GROUP**

*imiSigg*

PROTECTING BC'S RESOURCES





Ensure coordinated, collaborative, cost-effective delivery of provincial government invasive species programs

Goal 1: Prevent the establishment of new invasive species

Goal 2: Reduce socio-economic and environmental impacts of existing invasive species

Goal 3: Provide framework and capacity for invasive species management



# Resources

**INVASIVE SPECIES ALERT!**

**FERAL PIG (*Sus scrofa*)**

**REPORT INVASIVE SPECIES**  
[www.reportinvasives.ca](http://www.reportinvasives.ca)

\* In BC, feral pigs are previously domesticated pigs, or their descendants. Feral refers to pigs of the genus *Sus* that are not in captivity or are not otherwise under a person's control.

**NATIVE RANGE**  
 The Eurasian boar is the wild origin of the domesticated pig and is native to Europe, Asia and North Africa. Domesticated pigs and wild boar have been introduced all over the world for farming and hunting.




**DESCRIPTION**  
 Feral pigs...

- Vary drastically in appearance (size, weight, colour etc.)
- Appear like domestic pigs
- Vary in colour (typically grey, brown or black)
- Vary in weight (males 60-200 kg, females 35-150 kg)

**PRIMARY IMPACT:**  
 Feral pigs damage agricultural crops through foraging, and can transmit diseases and parasites to people, livestock, and wildlife.

**WHY SHOULD WE CARE?**  
 Feral pigs...

- Are destructive to crops and private property
- Can prey upon livestock such as goats and sheep
- Can spread diseases and parasites, including swine brucellosis and pseudorabies, which can have devastating effects on livestock and wildlife
- Dig up roots and rub against trees, affecting ecosystem processes from the soil up
- Create wallows (mud pits) that can affect pond and wetland structure
- Compete with native wildlife for food
- Feed on reptiles, eggs of ground nesting birds, and small mammals

**DID YOU KNOW?**  
 Feral pigs go by many different names (feral swine, wild pig, wild boar, ferret hog, razorback, pinney-woods rooster etc.). They may be descended from domesticated pigs, wild boar released for hunting, or a combination of both!

(over)

**INVASIVE SPECIES ALERT!**

**YELLOW PERCH (*Perca flavescens*)**

**REPORT INVASIVE SPECIES**  
[www.reportinvasives.ca](http://www.reportinvasives.ca)

**NATIVE RANGE**  
 Yellow Perch are native in North America, east of the Continental Divide. In Canada their native range starts in Alberta and extends northward into the Northwest Territories and eastward to Nova Scotia. Yellow Perch's southern native range extends into the US, reaching from North Dakota to the eastern Atlantic states, and south to South Carolina and Georgia.



**DESCRIPTION**  
 Yellow Perch...

- Are oval shaped and laterally compressed
- Are on average 10-25 cm long
- Have two dorsal (back) fins ; the fin closest to the head is taller and longer than the other
- Have a bright green to olive back, yellow-green sides, and white belly
- Have approximately 7 green-brown vertical bands on sides
- Have yellow-green dorsal and caudal fins, yellow-red pelvic fins, and a forked tail

**PRIMARY IMPACT:**  
 Yellow Perch have been found to compete with native predators for food and to reduce the abundance and diversity of native prey species.

**WHY SHOULD WE CARE?**  
 Yellow Perch...

- Could impact ecosystem biodiversity by preying heavily on young fish and insects
- Are known carriers of parasites that are harmful to other fish species
- Could compete with native fish species for food and habitat
- Have shown to impact salmon growth and survival in small B.C. lakes where they have been introduced

**BIOLOGY AND SPREAD**  
 Yellow Perch have been introduced to non-native regions by stowing away on boats; being released from fish markets and aquariums; being stocked for sport fishing, and escaping from fish lines when used as live-bait. Once established, Yellow Perch can reproduce and spread quickly. Females lay up to 15,000 eggs at a time, and these eggs develop into larva and juveniles that can drift to new regions downstream with the current. Mature individuals will also swim to new regions in search of food.

**DID YOU KNOW?**  
 Yellow Perch have been widely stocked for fishing, as they are popular among recreational and commercial fisherman for their tasty meat. This species is relatively easy to catch when targeted or not, due to its voracious feeding behaviour.



**INVASIVE SPECIES ALERT!**

**BLACK HENBANE (*Hyoscyamus niger*)**

**REPORT PROHIBITED SPECIES**  
[www.reportaweedsbc.ca](http://www.reportaweedsbc.ca)  
 1-888-WEEDSBC

**HAVE YOU SEEN THIS PLANT?**



**DESCRIPTION**

- Annual or biennial forb grows up to 1 m tall from fleshy taproot.
- Sticky, greasy hairs cover entire plant.
- Erect, almost woody stem yields alternating, dark green leaves, partially lobed with conspicuous veins.
- Pale yellow, funnel-shaped (5-lobed) flowers with purple veins and throat.
- Leaves and flowers produce foul odour.
- Reproduces and disperses by seed; single plant can produce tens of thousands of seeds.
- Seed dispersal mainly by wind and contaminated gravel soil; seeds viable in rangelands 1-5 years.
- Prefers disturbed corridors, especially open rangelands, road sides and riparian areas.
- Prefers moist, nutrient rich, sandy loam soils but does not tolerate shade or saturated soils.

**PRIMARY THREAT: Extremely poisonous to livestock and humans; harbours major crop pests.**

**WHAT CAN YOU Do?**

- REPORT sightings.
- SELECT non-invasive plants for your garden.



**DISTRIBUTION IN BC**  
 Confirmed sites limited to the Cariboo, Okanagan-Similkameen, Thompson-Nicola and East Kootenay regions.



For more information: [www.for.gov.bc.ca/hra/Plants/prohibited.htm](http://www.for.gov.bc.ca/hra/Plants/prohibited.htm)

# See something that doesn't belong?

Report it!



- Smartphone apps
- Online form
- IAPP
- Hotline (mussels)



[www.reportinvasives.ca](http://www.reportinvasives.ca)

[www.gov.bc.ca/invasive-species](http://www.gov.bc.ca/invasive-species)

The more that you  
**READ**, the more things  
you will **KNOW**.  
The more that you  
**LEARN**, the  
more places  
you'll **GO**.



**Dr. Seuss™**

*I Can Read with My Eyes Shut!* by Dr. Seuss

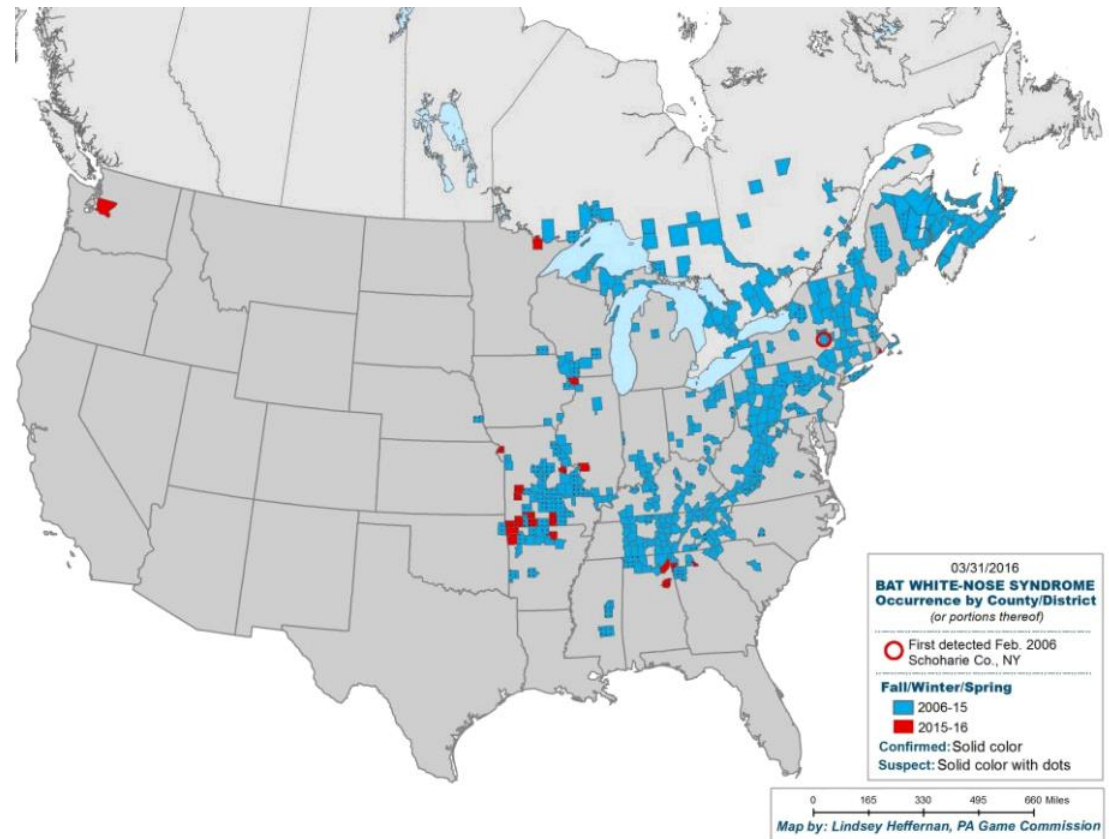
™ & © 1960, 1988 Dr. Seuss Enterprises, L.P. EarlyMoments.com







# White-nose syndrome

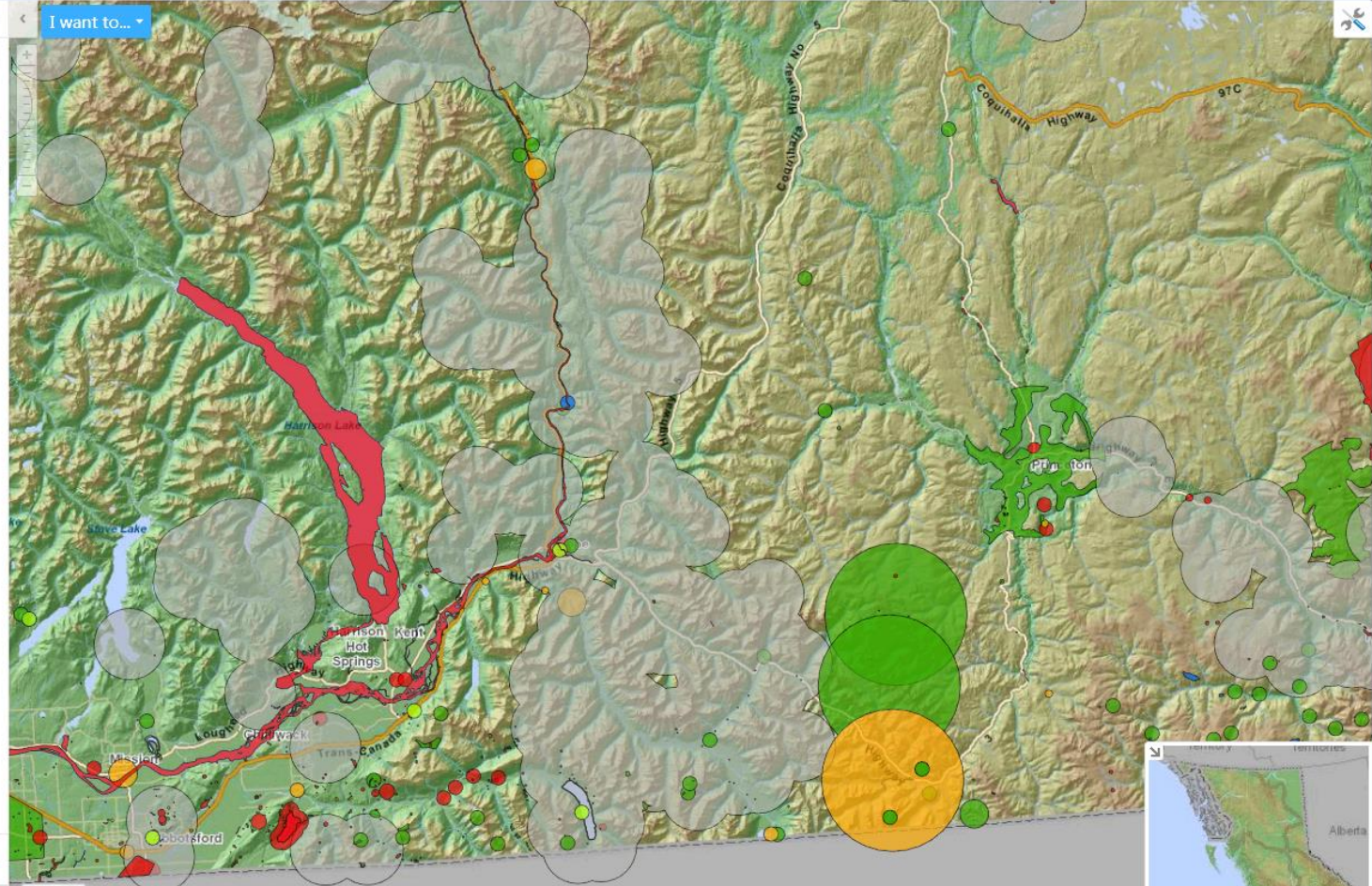




# Conservation Data Centre

Search...

- Map Layers**
- Operational Layers
  - Fish Wildlife and Plant Species
    - Species and Ecosystems at Risk - Publicly Availi
    - Species and Ecosystems at Risk - (Masked Secu
    - Species and Ecosystems at Risk - (Extirpated ar
  - Base Maps
  - Administrative Boundaries
  - Land Ownership and Status
  - Forest Grasslands and Wetlands

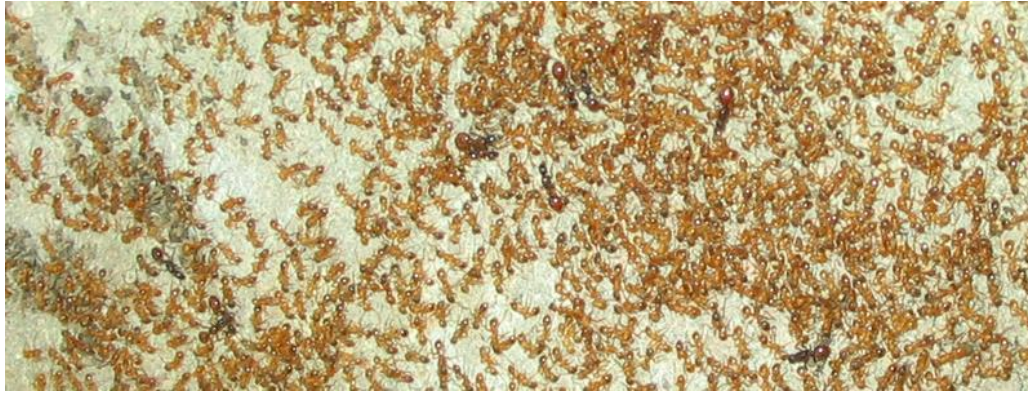


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# Post-forum workshop Thursday



# 2016 Invasive Mussel Program

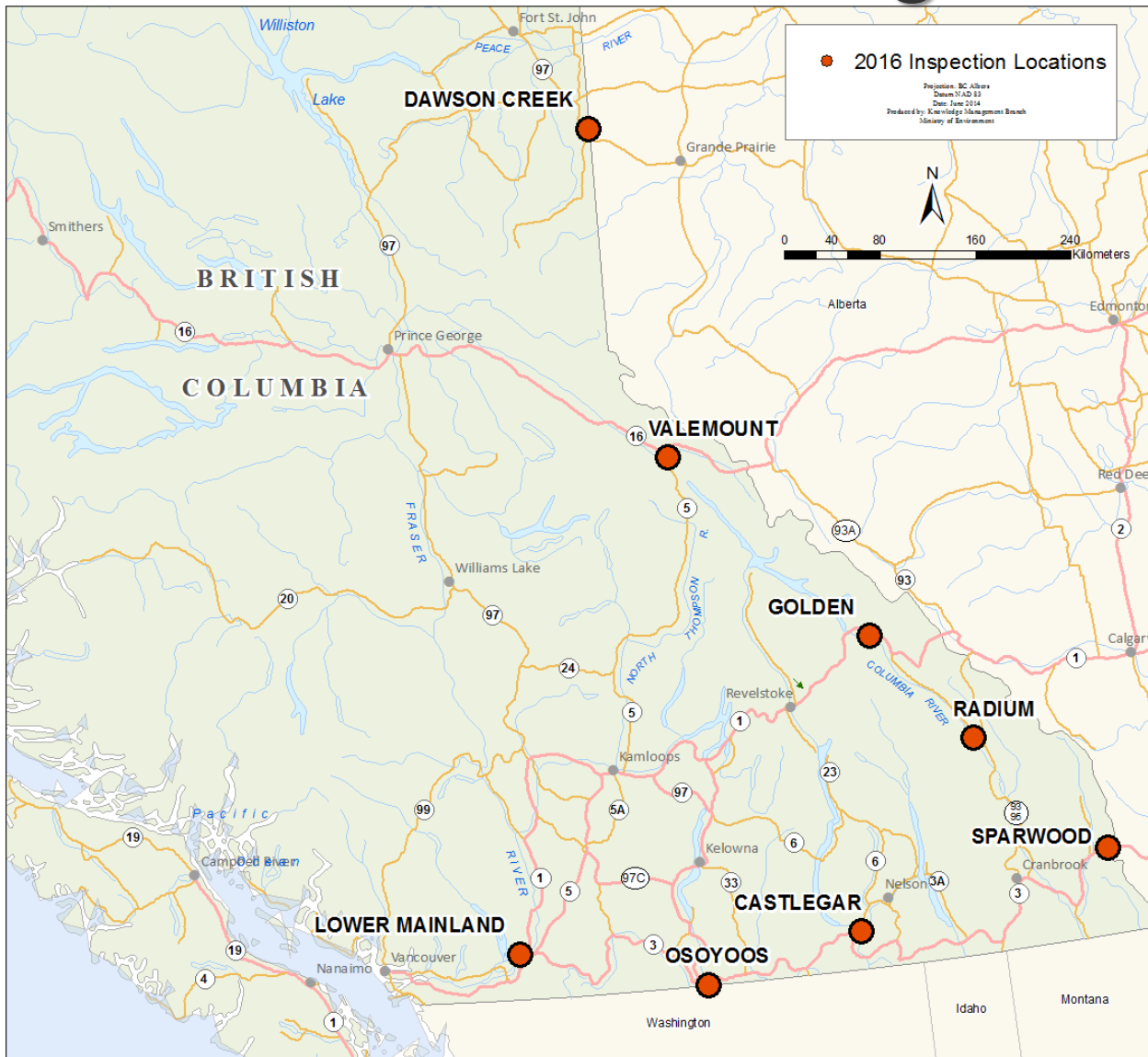


# 2015 Pilot Season vs. 2016 Expanded Season

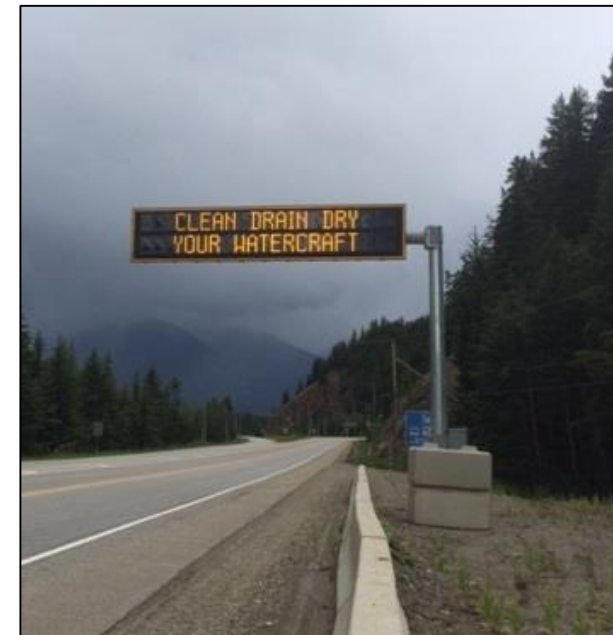
	2015	2016
Type of Inspection Stations	Roving (~ 30 locations)	<b>Permanent (8 primary locations)</b>
Number of Auxiliary Conservation Officers	12	<b>33*</b>
Inspection Crews with Mobile Decontamination Units	6	<b>8</b>
Level of Coverage	5 days/week & 7hrs/day, June-October	<b>7 days/week &amp; 10hrs/day, April to September/October</b>

*\* 32 Auxiliary CO's and 1 full time program coordinator*

# Inspection Station Coverage in 2016



# New in 2016 – Improved Signage

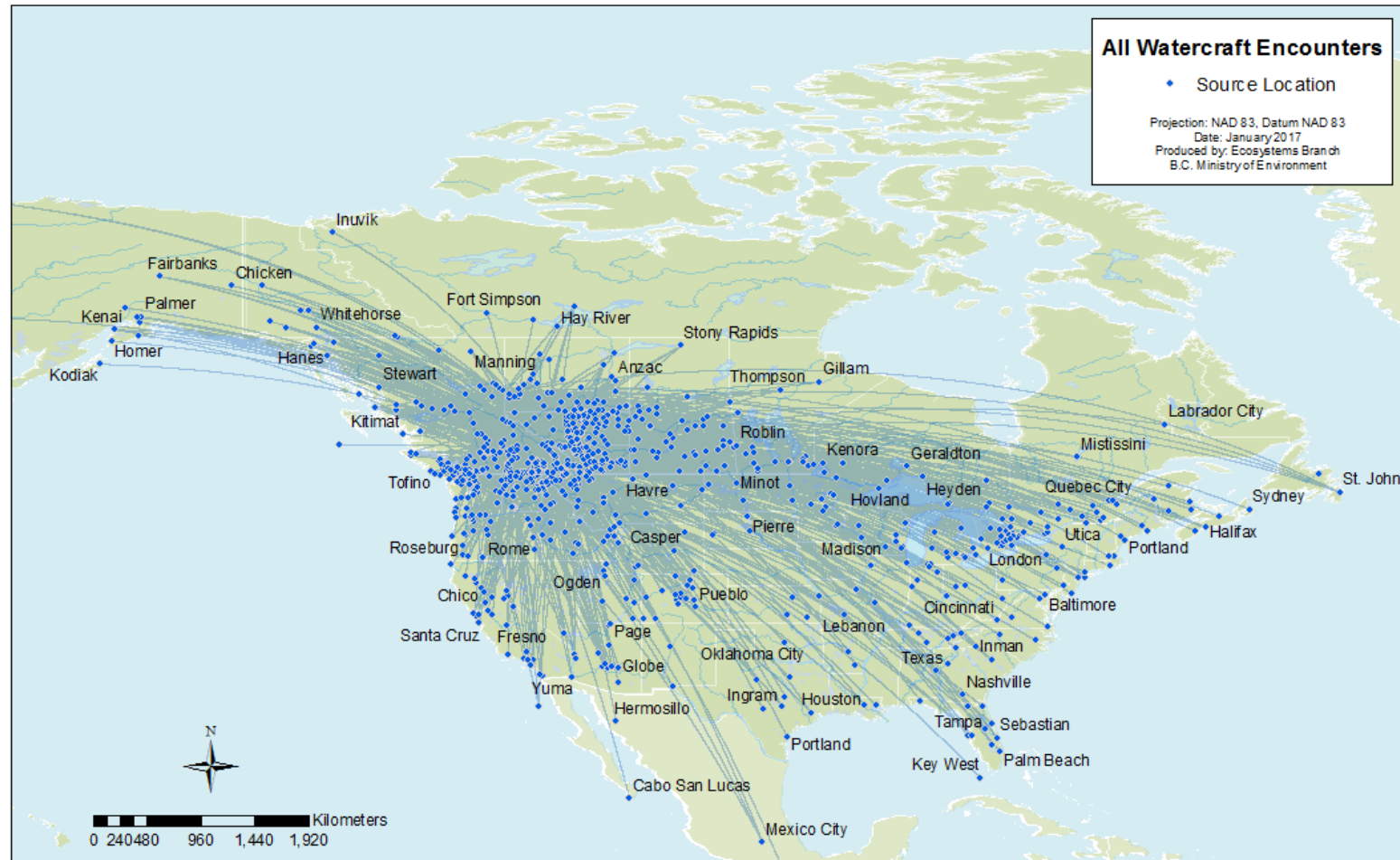


# Watercraft Inspection Data 2016

	2015	2016 *
Total Watercraft inspected	4,350	<b>~24,500</b>
Number of people interacted with	~10,000	<b>~50,000</b>
Watercraft from high risk jurisdiction	70	<b>684</b>
Mussel fouled boats (adults and/or larvae)	15	<b>17</b>

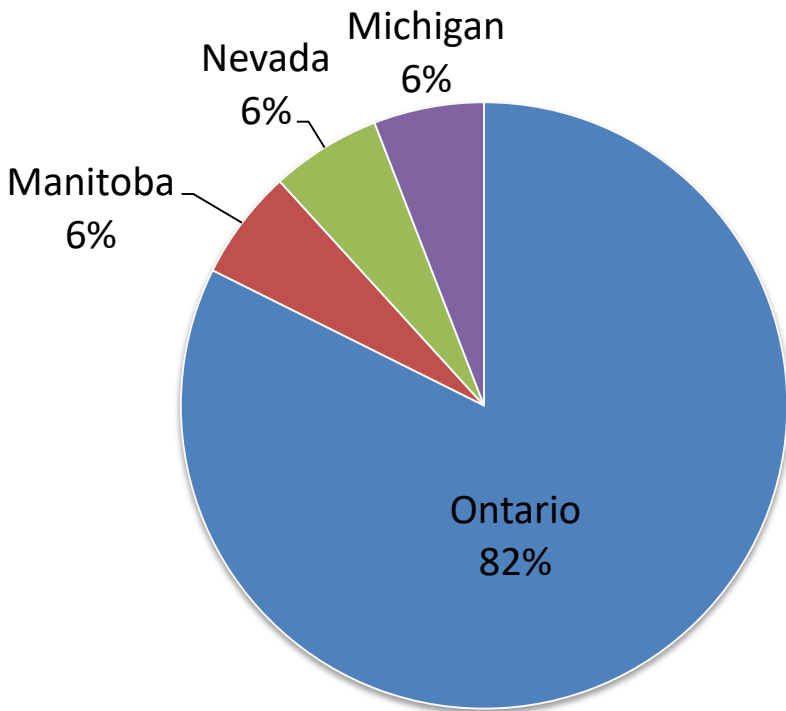
# Source Location of All Watercraft Inspected

- 2015: Boats from 33 different jurisdictions
- 2016: Boats from 58 different jurisdictions

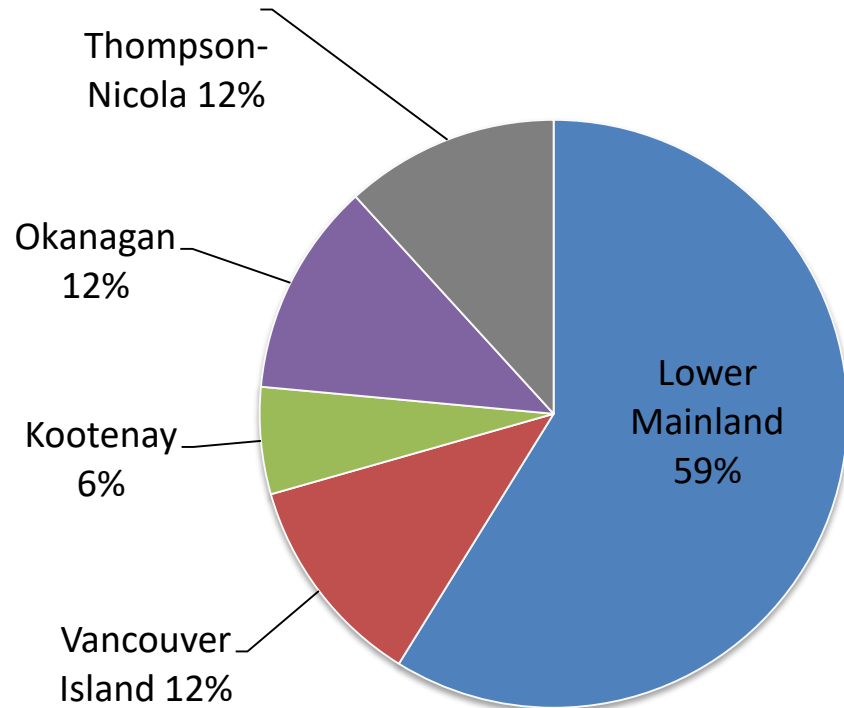


# 2016 Mussel Fouled Watercraft

## Origin of Mussel Fouled Boats

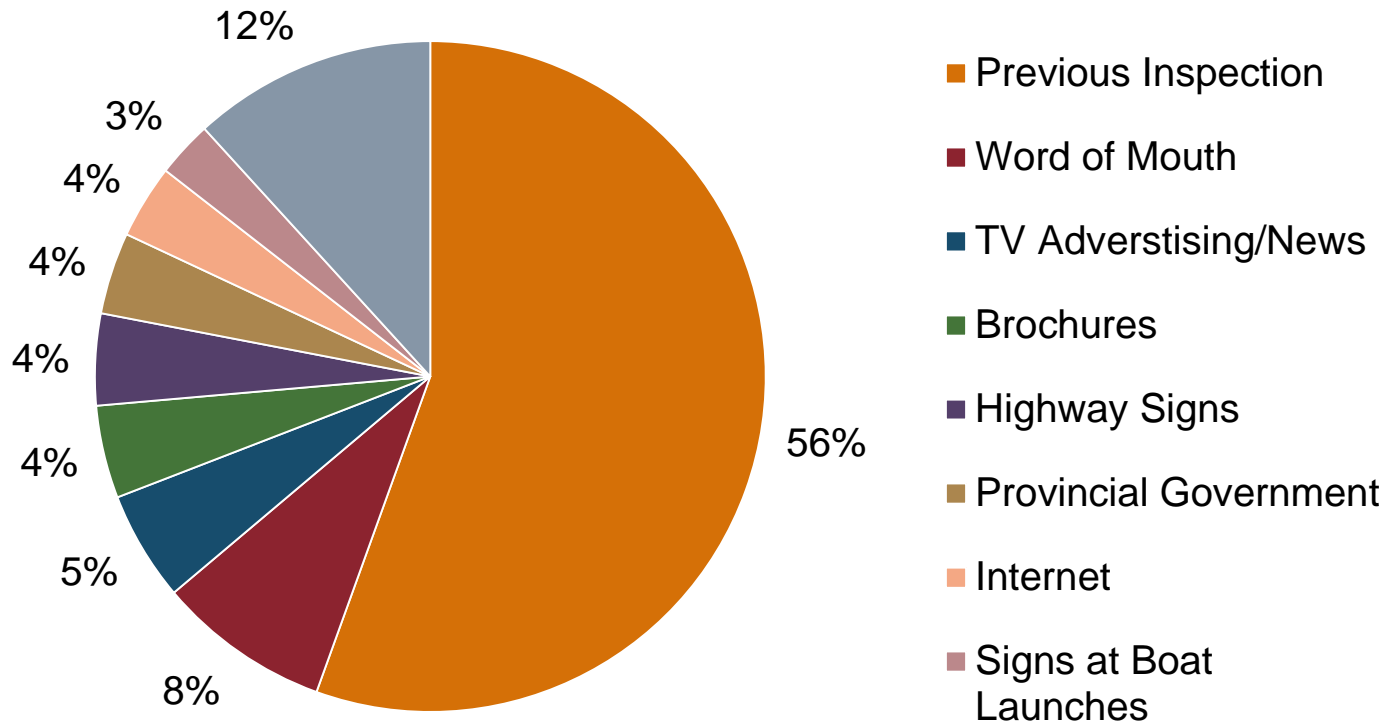


## Destination of Mussel Fouled Boats





# Previous Knowledge of Clean, Drain, Dry and/or Aquatic Invasive Species



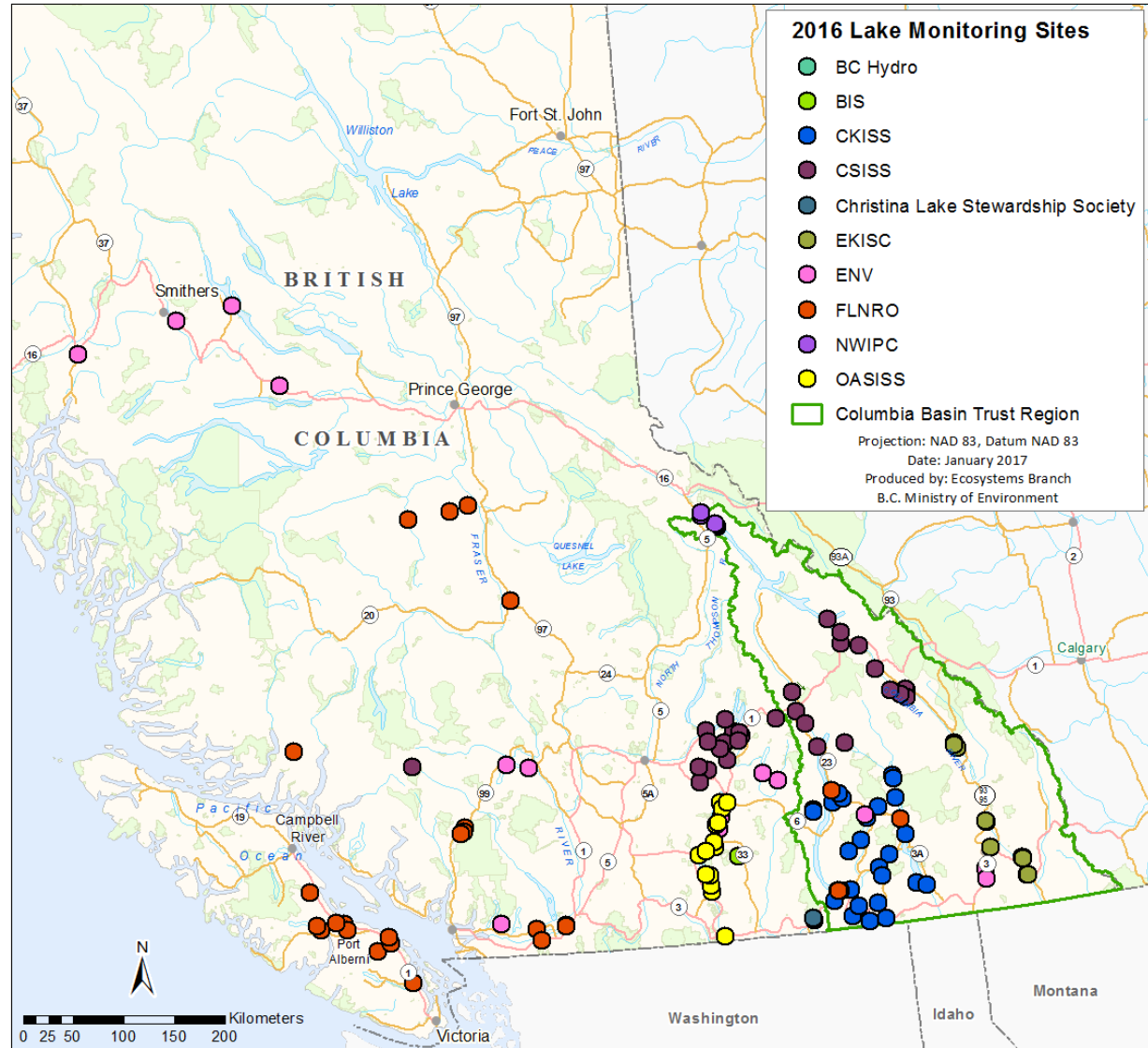
Other included: Job related training (Forestry etc.), Radio, Social Media, Newspaper, Local Government, Regional Invasive Species Group, Magazines, ISCBC, Boat Licensing

# 2016 Outreach & Education

- Attended several large boating/fishing shows during the 2016 season including:
  - BC Boat & Sportsman/Hunting Show (Abbotsford) – March
  - BC Interior Sportsman Show (Kelowna) – April
  - Melges 24 Canadian National Championship (Kelowna) - June
  - Sportsman Show (Fort St. John) – August
  - Mosquito Creek Boat Show (North Vancouver) - September
- Crews interacted with ~49,200 people to promote the message of Clean, Drain, Dry and educate on AIS.
- Collaboration with regional invasive species committees to promote the message of CDD at boat launches and local events.

# 2016 Lake Monitoring

- 234 samples from 98 different lakes collected in 2016.
- All samples negative for invasive mussel veligers.
- Samples collected by partnering agencies and Ministry staff.



# 2017 Outlook

- Currently hiring inspectors for operational start date of April 01 2017
- Continuing to work with the western provinces to streamline watercraft inspection and decontamination protocols.
- Increase monitoring effort
- **Work closely with Montana and adapt our operations based on their plan**
- **Explore extending hours at the Montana border**
- **Collaborate with CBSA to have a consistent enforcement program along the US-CAN border**

# Boater traffic model

Collaboration with Sam Fisher at Mark Lewis' lab at University of Alberta

- Limited resources are available for boat inspections
  - Where should we place the inspections stations in order to minimize the
    - propagule inflow?
    - invasion risk?
- Optimize inspection station placement
- Inform EDRR



# Aquatic invasive animals

## Don't Let it Loose Campaign



January 6, 2017

### NOTICE

Re: Prohibited Fish Species in British Columbia

To All Live Fish Importers and Pet Supply or Live Food Retailers:



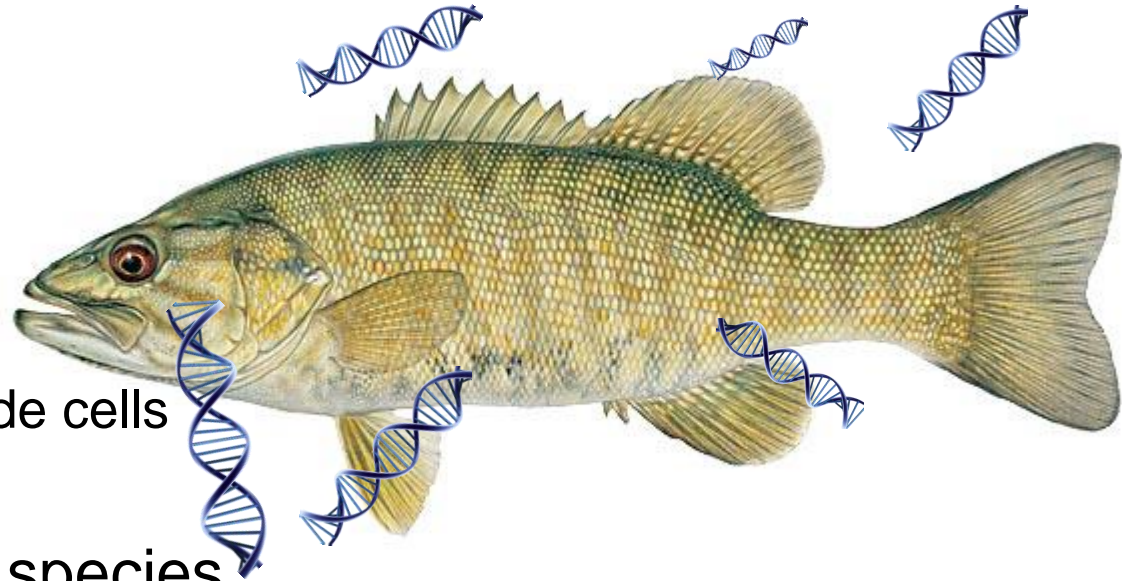
- Enforce the fish species listed under schedule 3 of the Controlled Alien Species Regulations under the BC Wildlife Act
- Mail out of ID guide and letter to around 350 pet and aquarium stores, fish importers, and live fish retailers
- Provided with a 6 month amnesty to kill or sell prohibited species outside BC
- Close collaboration with the BC Conservation Officer Service
- Shared messaging with the ISCBC
- [www.gov.bc.ca/invasive-species](http://www.gov.bc.ca/invasive-species)

# Environmental DNA

Davon Callandar Postdoc-DFO; Cathryn Abott DFO

- Source

- Sloughed cells
- Excreted
- Reproduction
- Free floating DNA or inside cells



- Ideal for sampling rare species
- In 2017 use it on Smallmouth bass in the beaver Creek-Quesnel
- Thompson region Yellow Perch
- Columbia Northern Pike

# Management of non-native sportfish

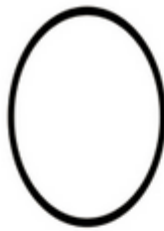
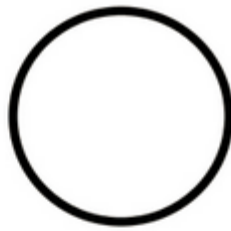







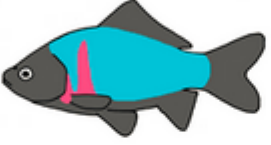




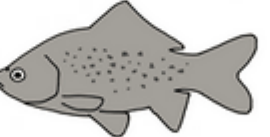

- BC has a number of non-native sport fish, yellow perch, smallmouth bass, largemouth bass, Northern pike and walleye
- Management approach across the Province can be improved
- Need for clear communication to the angling public about which management action is taken where
- Building peer to peer pressure to prevent further introductions



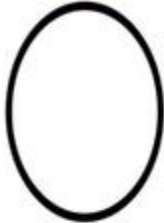
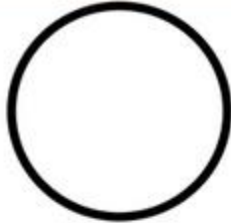


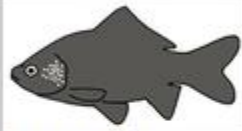




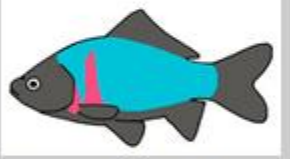


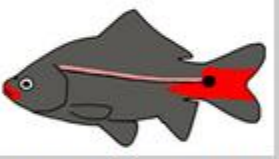


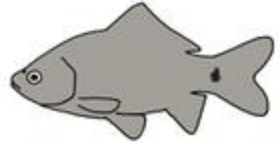
# Online taxonomic keys Royal BC museum

- RBCM has a number of online keys available now at
- [http://taxonomy.royalbcmuseum.bc.ca/Taxonomy/key\\_toc.aspx](http://taxonomy.royalbcmuseum.bc.ca/Taxonomy/key_toc.aspx)
- Very accessible species ID information
- Includes key groups like crayfish, crabs, tunicates, carps and minnows

- ☐ Porifera
  - 📄 BC Glass Sponges
- ☐ Arthropoda
  - 📄 BC Decapods
    - ☐ Decapoda
      - 📄 BC Anomura - Key to Hermit Crabs
      - 📄 BC Anomuran Crabs
      - 📄 BC Brachyuran Crabs
      - 📄 BC Crayfish and Lobsters
      - 📄 BC Ghost and Mud Shrimps
      - 📄 BC Prawns
      - 📄 BC Shrimp - Key to Families
      - 📄 BC Shrimp - Key to Family Acanthephyridae
      - 📄 BC Shrimp - Key to Family Alpheidae
      - 📄 BC Shrimp - Key to Family Crangonidae
      - 📄 BC Shrimp - Key to Family Hippolytidae
      - 📄 BC Shrimp - Key to Family Oplophoridae
      - 📄 BC Shrimp - Key to Family Palaemonidae
      - 📄 BC Shrimp - Key to Family Pandalidae
      - 📄 BC Shrimp - Key to Family Pasiphaeidae
- ☐ Brachiopoda
  - 📄 BC Brachiopods
- ☐ Echinodermata
  - 📄 BC Echinoderms
    - ☐ Crinoidea
      - 📄 BC Crinoids
    - ☐ Echinoidea
      - 📄 BC Echinoids
- ☐ Ascidia
  - 📄 BC Tunicates
- ☐ Mollusca
  - 📄 BC Chitons
  - 📄 BC Squids and Octopods
- ☐ Vertebrates
  - 📄 Exotic Carps and Minnows of BC

Body Cross-Section	 Compressed			 Cylindrical		
Nuptial Tubercles	 White tubercles across snout	 White tubercles across head and nape	 White tubercles on gill covers	 White tubercles on pectoral fin	 White tubercles on body scales	 White tubercles on dorsal fin
Other Changes in Spawning Adults	 Females with tube-like ovipositor	 Adults turn iridescent blue with pink-red band behind head	 Males turn black with two dusky yellow bands behind head	 Males develop grey fleshy pad between head and dorsal fin	 Bright red lips and caudal peduncle with pink lateral stripe	
Bands and Spots	 Dusky blue-grey triangle behind head		 Small dusky flecks over body		 Dusky to dark spot at tail base	

- Applicable Taxa**
- \_\_\_\_\_ *Hypophthalmichthys nobilis*
  - \_\_\_\_\_ *Rhodeus sericeus*
  - \_\_\_\_\_ *Mylopharyngodon piceus*
  - \_\_\_\_\_ *Cyprinus carpio*
  - \_\_\_\_\_ *Carassius carassius*
  - \_\_\_\_\_ *Pimephales promelas*
  - \_\_\_\_\_ *Carassius auratus*
  - \_\_\_\_\_ *Ctenopharyngodon idella*
  - \_\_\_\_\_ *Leuciscus idus*
  - \_\_\_\_\_ *Cyprinella lutrensis*
  - \_\_\_\_\_ *Scardinius erythrophthalmus*

Body Cross-Section	 <p>Compressed</p>			 <p>Cylindrical</p>		
Nuptial Tubercles	 <p>White tubercles across snout</p>	 <p>White tubercles across head and nape</p>	 <p>White tubercles on gill covers</p>	 <p>White tubercles on pectoral fin</p>	 <p>White tubercles on body scales</p>	 <p>White tubercles on dorsal fin</p>
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Bands and Spots	 <p>Dusky blue-grey triangle behind head</p>		 <p>Small dusky flecks over body</p>		 <p>Dusky to dark spot at tail base</p>	

Applicable Taxa  
*Pimephales promelas*