

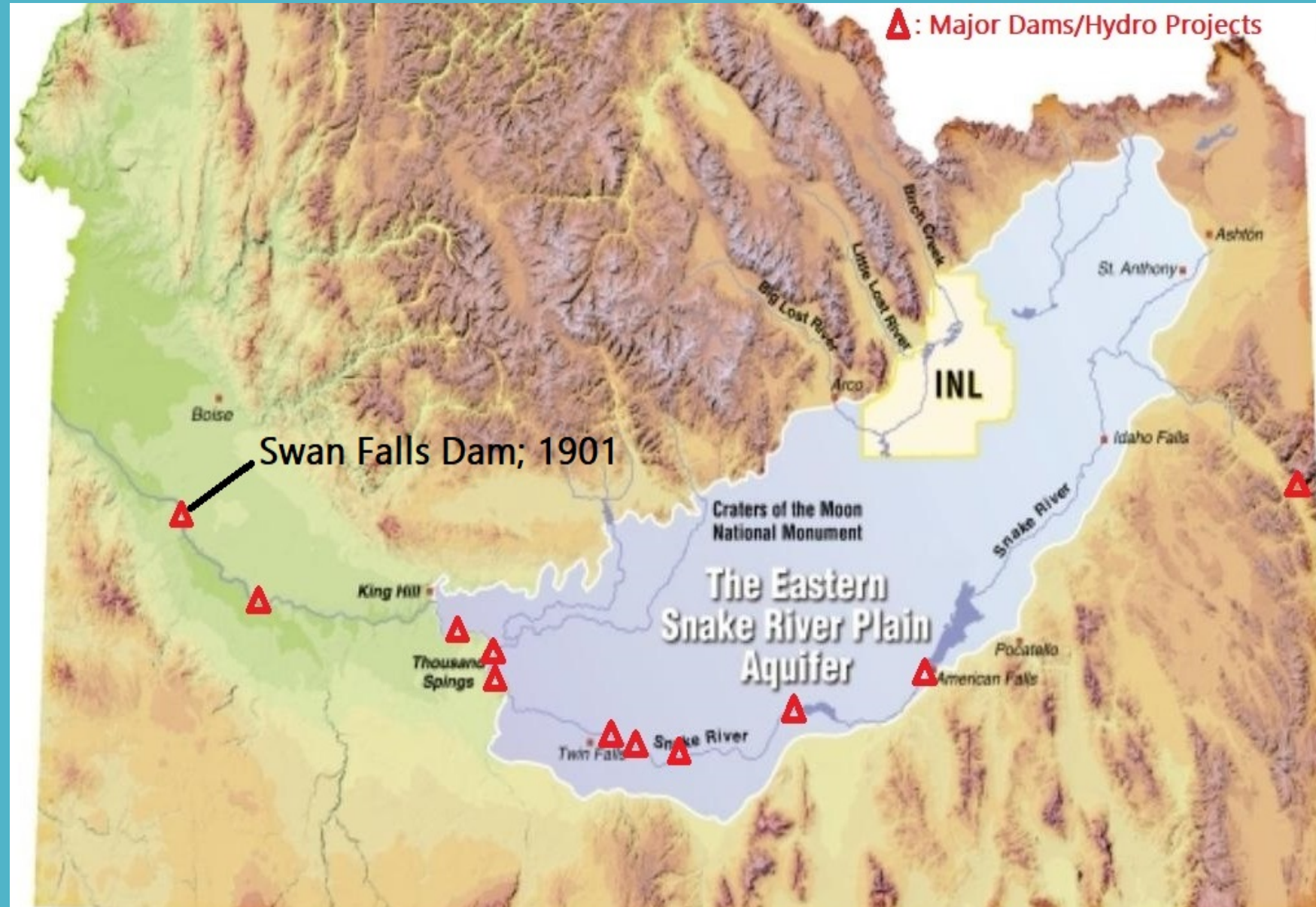
Water Management & Endangered Species Conservation in Southern Idaho



Idaho Fish & Wildlife Office,
USFWS, Boise, Idaho

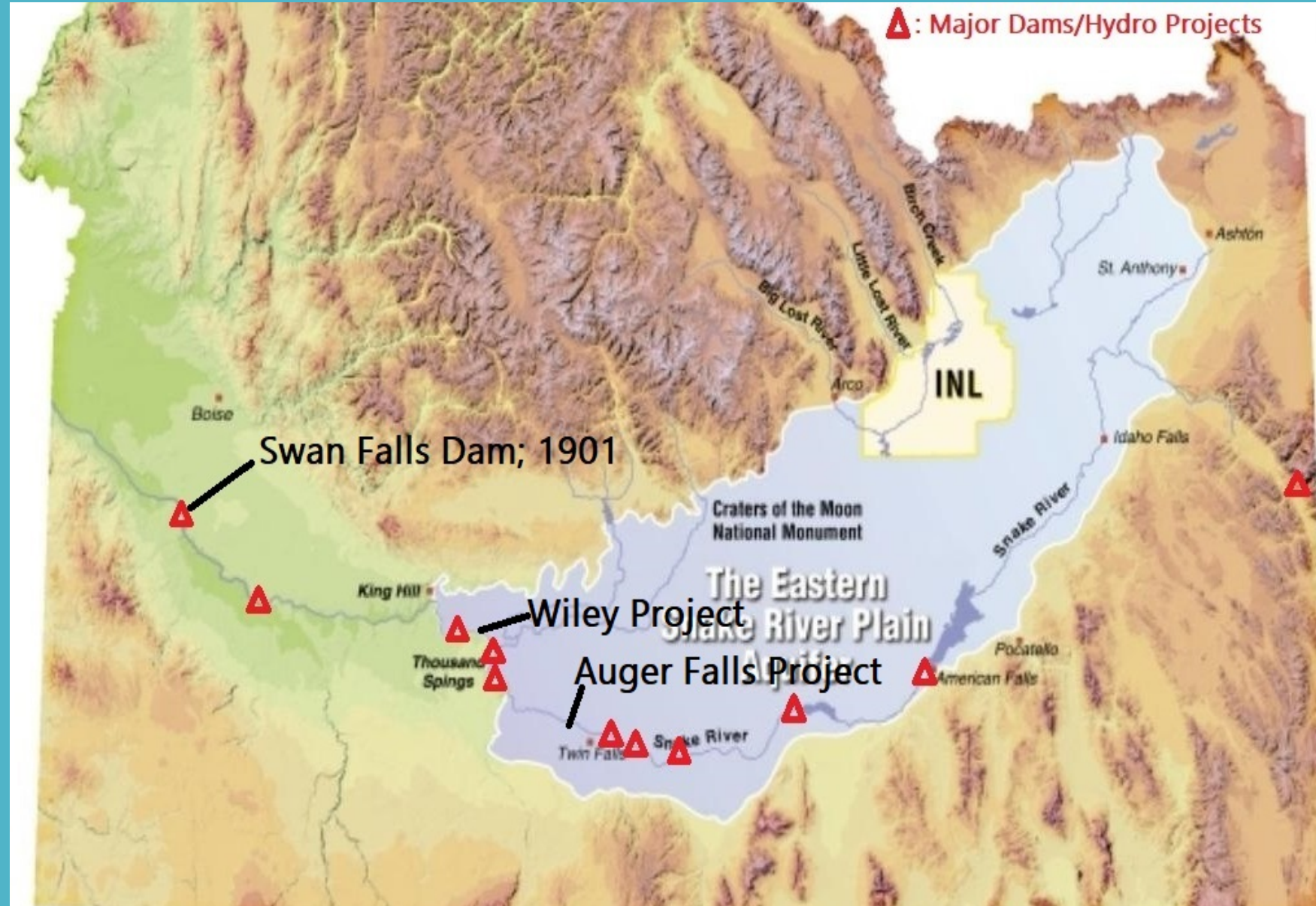
The Snake River: A working river:

- Hydropower
- Flood Control
- Irrigation Storage
- Hydrologically connected to ESPA



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- Flood Control
- Irrigation Storage
- 1980s Proposals for additional dams.



Proposed Hydro projects
contributed to listing of 5
snail species:

Bliss Rapids Snail:



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Banbury Springs Limpet:



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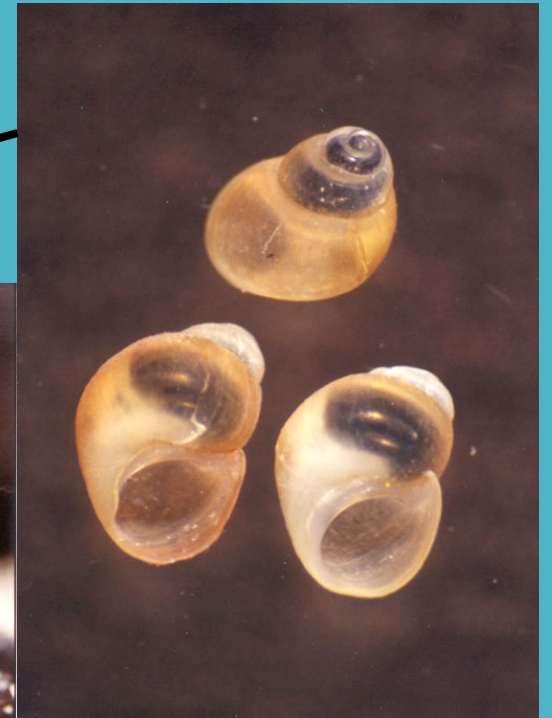
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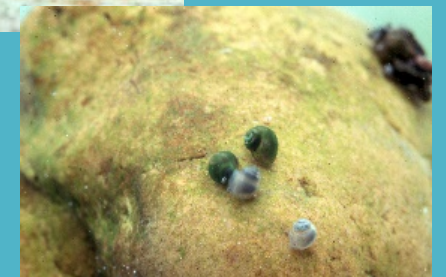


1) The Snake River and Snake River Physa:



Photo: Dr. Jack Burch

2) The Eastern Snake Plain Aquifer and Spring-reliant Snails:



Snake River Physa (*Physa (Haitia) natricina*)

Description:

- Small relative to other members of the genus, measuring up to 6 mm in length;
- The body aperture is flaired and typically wider than visceral coils;
- Shell bears 3-3.5 shell whorls in adults;
- As with others in the family, it possesses an left-handed aperture.



Life History:

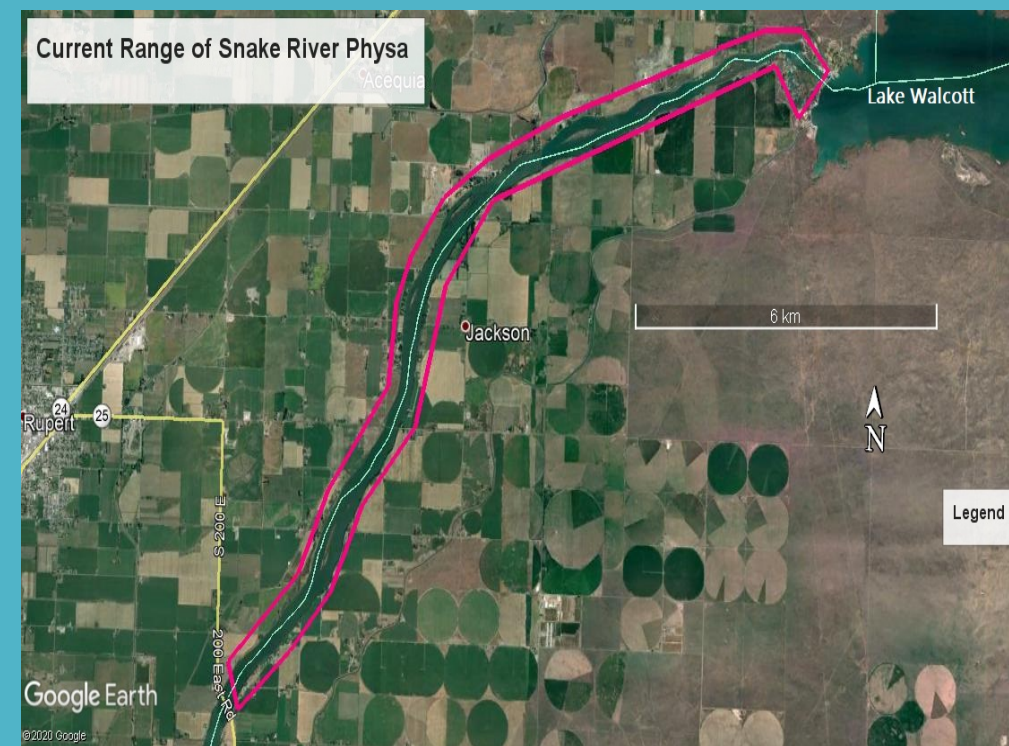
- Restricted to riverine habitats of the Snake River;
- Early descriptions suggest an affinity for boulder substrates, but more recent findings and analysis suggest a preference for gravels and pebbles, and avoiding fine sediments;
- Prefers water velocities that maintain clean, gravel-pebble substrates (≥ 0.5 m/sec);
- Likely feeds on epilithic diatoms;
- Is hermaphroditic, containing both male and female sex organs.



Photo: Dr. Jack Burch

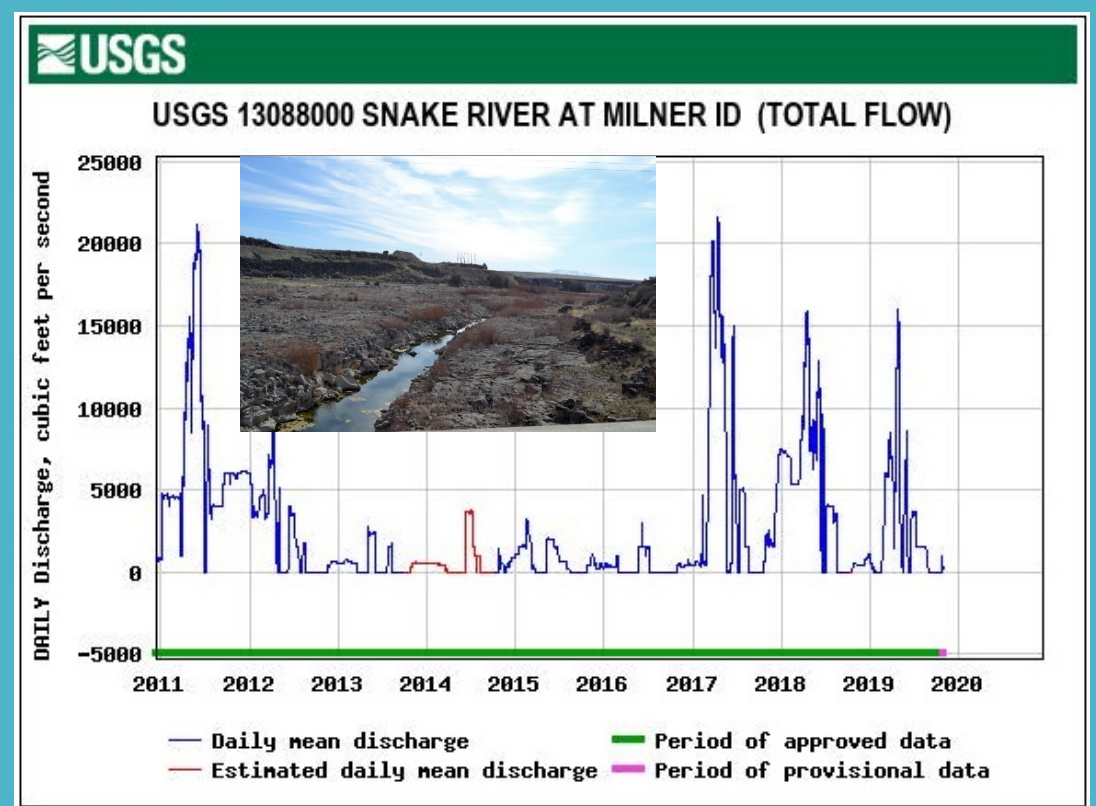
Distribution:

- The only large and persistent population known to occur occupies the 11-mile reach from the upper Milner Reservoir to Minidoka Dam.
- Historic records document live animals from a 300-mile length of the Snake River: from Ontario (RM 368), Oregon, to Minidoka Dam (RM 674), Idaho.
- Efforts to collect Snake River Physa downstream of the Minidoka Reach have not recovered any since 2002 and have not been found in the type localities (Hagerman) since the early 1990s.



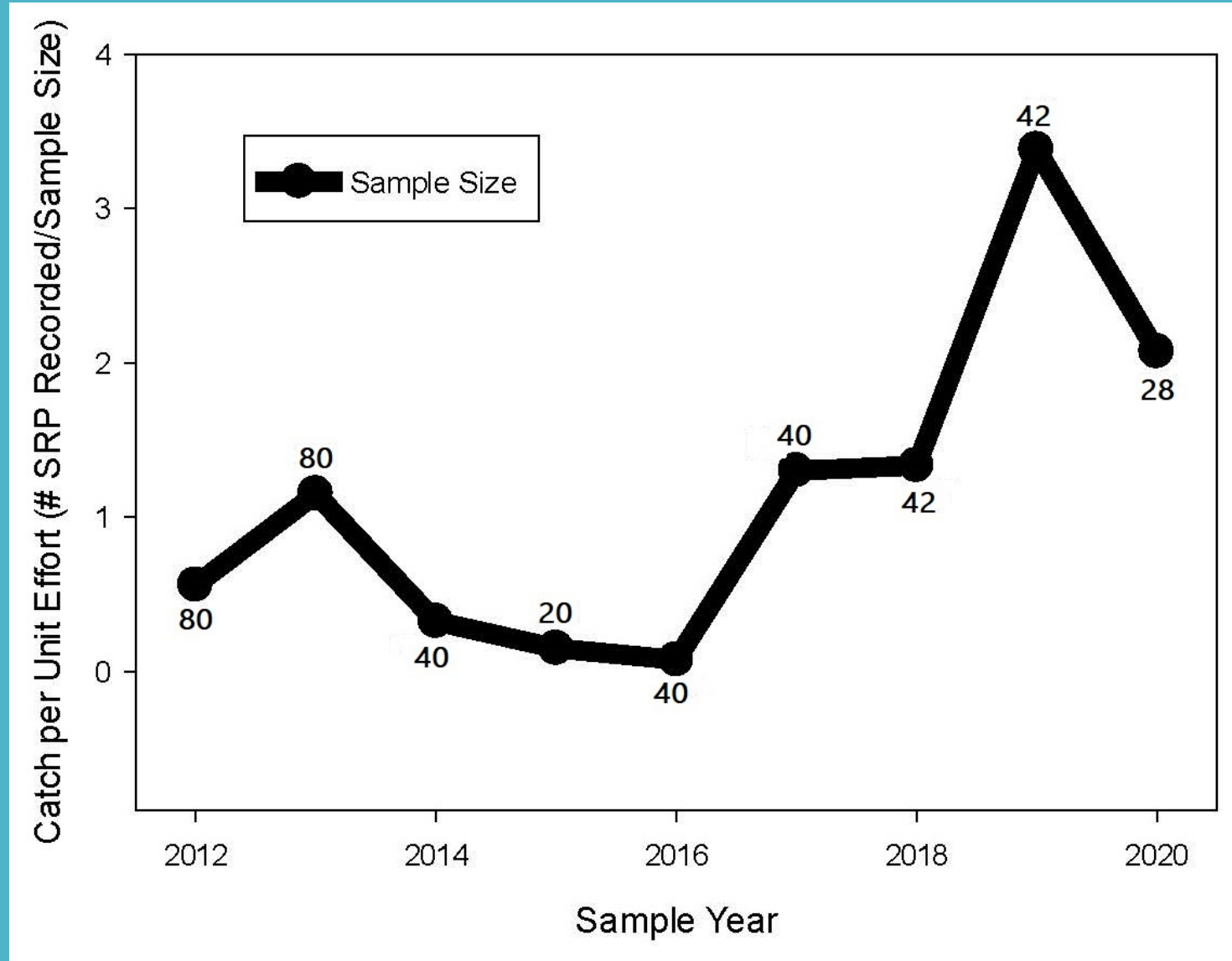
Threats:

- Water management (reduced flows);
- Degraded water quality from: urban or agricultural inputs (pesticides, septic, sediments, feed lots);
- Confined to single, small river reach (dams, excessive sediment deposition, habitat dewatering);
- Alterations of river bed.



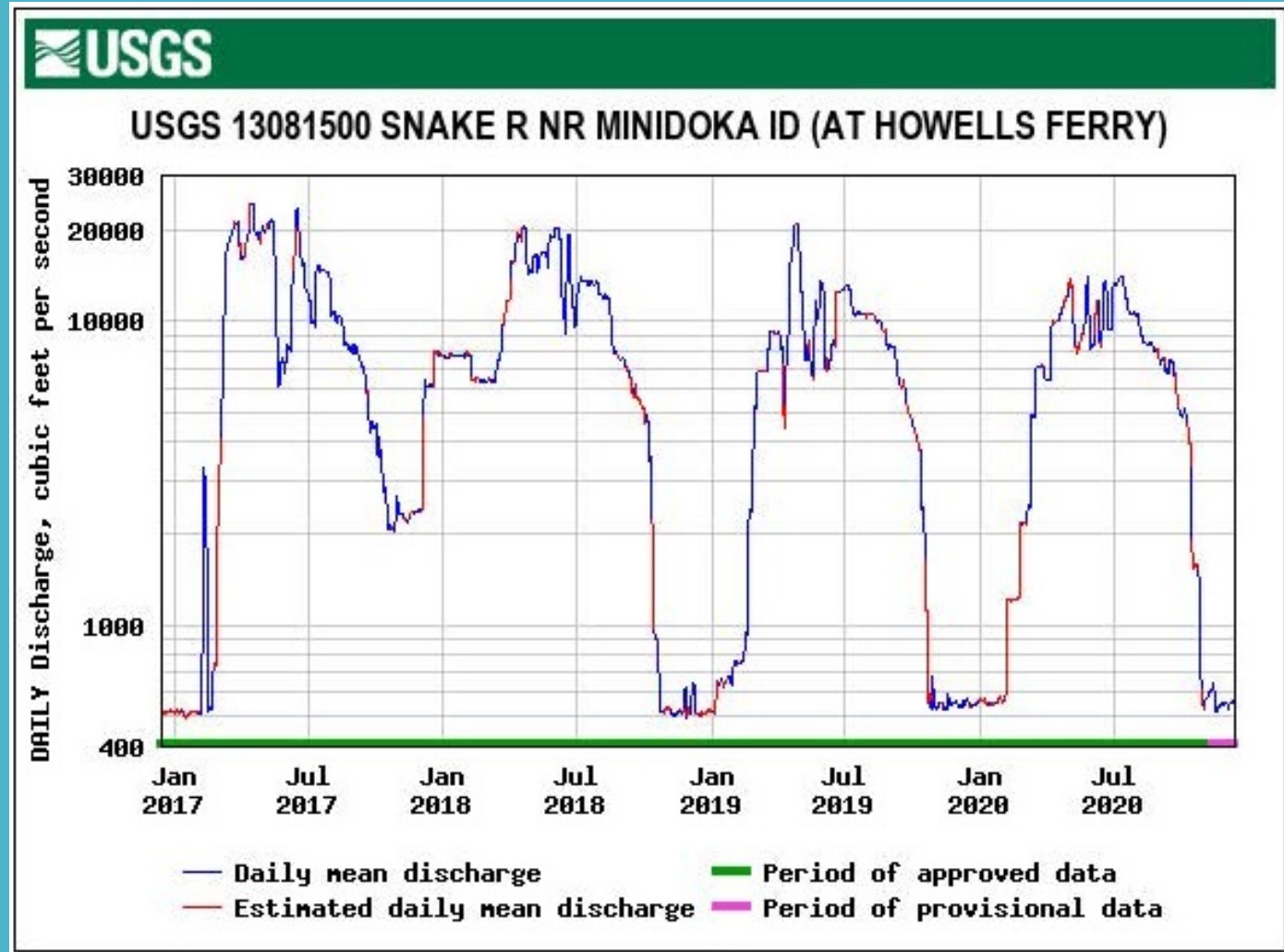
Status:

- Found consistently only in the 11-mile Minidoka Reach of the Snake River;
- Not recorded in any of its former range (Ontario to Hagerman) since 2002;
- Sampling has recorded as few as 3 and as many as 142 animals during annual monitoring.



Conservation Needs:

- “Consistent” river flows*;
- Habitats free of fine sediments;
- Good water quality;
- No alteration of benthic habitats.



Bliss Rapids Snail

(*Taylorcochcha serpenticola*)

Description:

- Small, measuring up to 4.0 mm;
- Shell turbinate in shape with 3.5-4.5 whorles;
- 1 of 2 species within the Genus, likely restricted to Idaho and Oregon.



Life History:

- Restricted to springs or spring-influenced waters of the ESPA*:
- Spring waters ranging from ~14-18 °C;
- Reaching high densities in springs (1000s/m²) and low in riverine habitats (10-100s/m²);
- Found on gavels, cobbles, and boulders without or limited fine sediments;
- Feeds on epilithic diatoms (periphyton);
- Photo-phobic;
- Separate sexes (dioeceous).

*ESPA: Eastern Snake Plain Aquifer



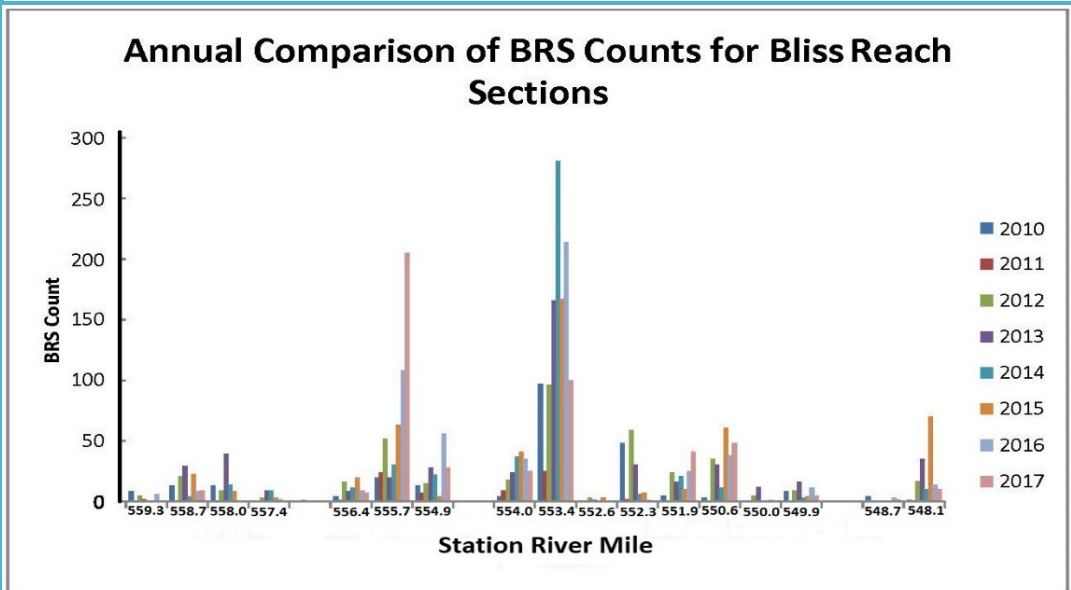
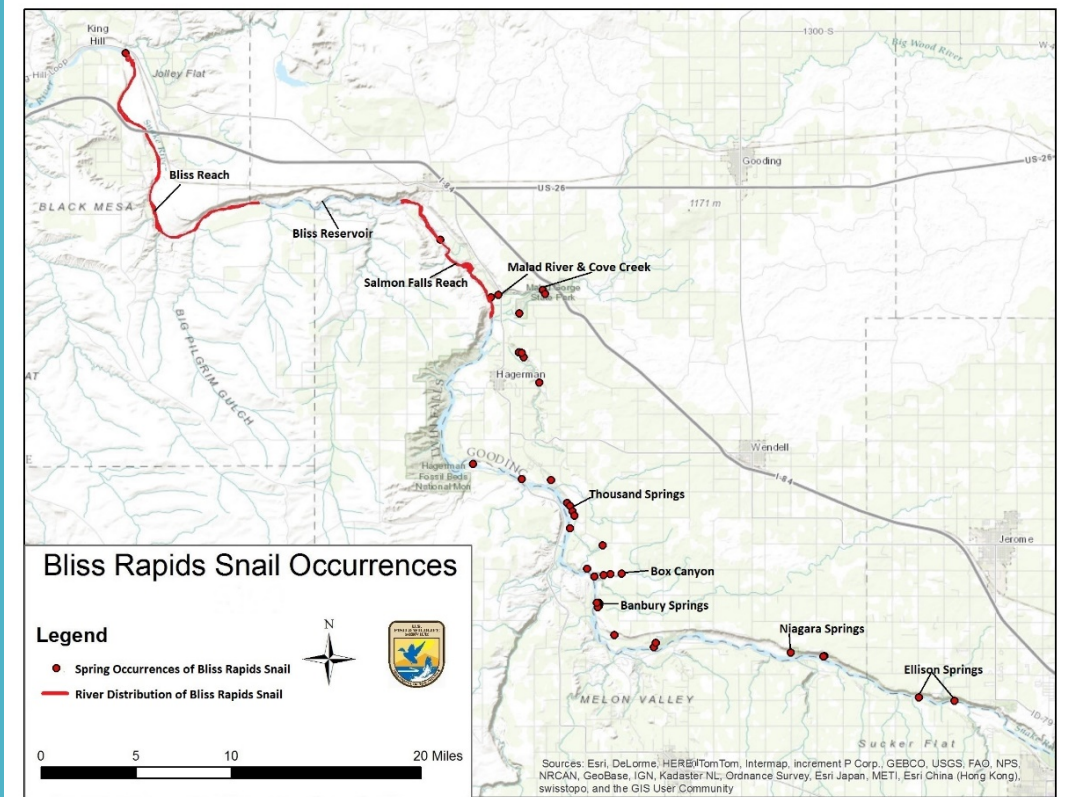
Distribution:

Springs:

- Springs derived from ESPA from the town of Bliss upstream to near Twin Falls (Devil's Corral – newly found);
- Rarely uniformly distributed with localized colonies;

River:

- In Snake River between King Hill to Bliss Dam and Bliss to Malad River;
- Likely reaching higher densities at locations in close proximity to springs;
- Absent from reservoirs.



Threats:

- Impediments to good water quality;
- Water quality threats to ESPA;
- Excessive fine sediments;
- Declining aquifer (ESPA);
- Habitat destruction.

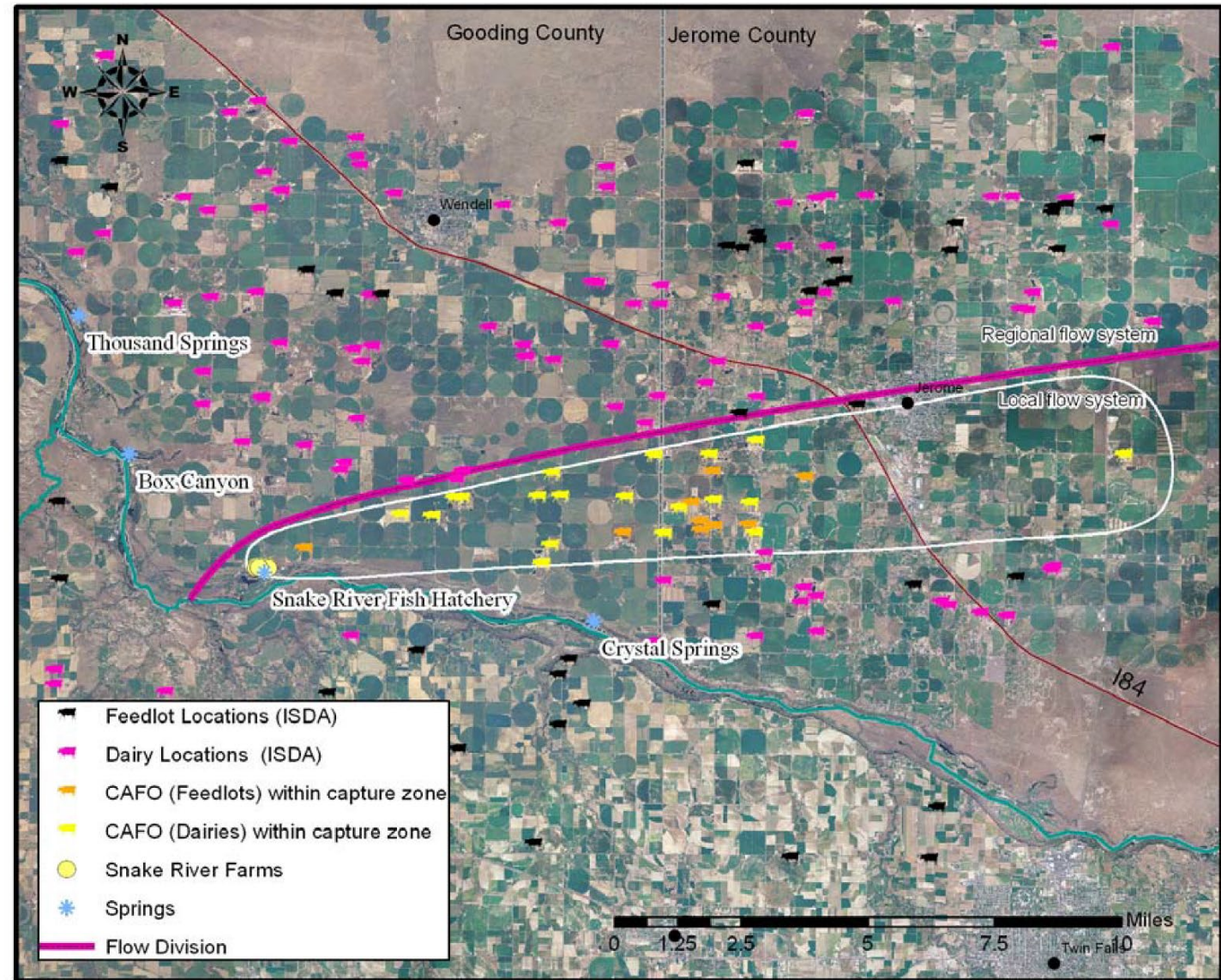
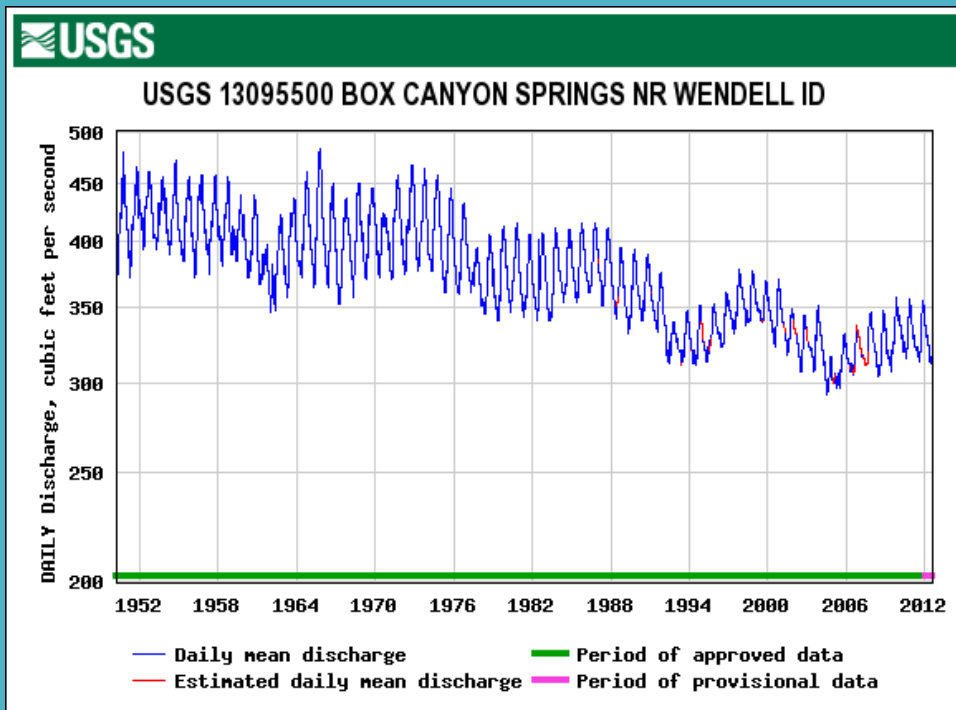
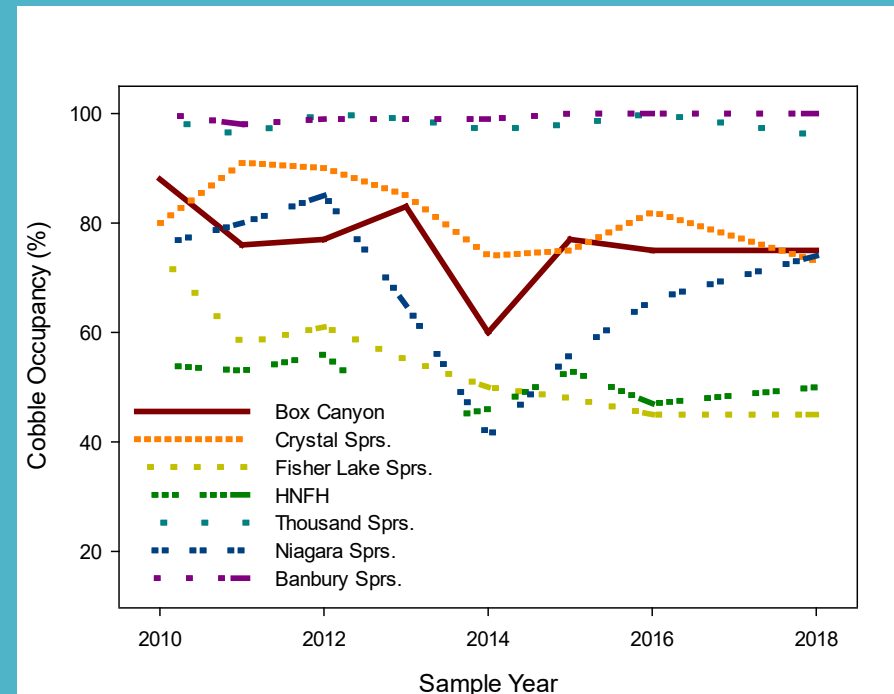
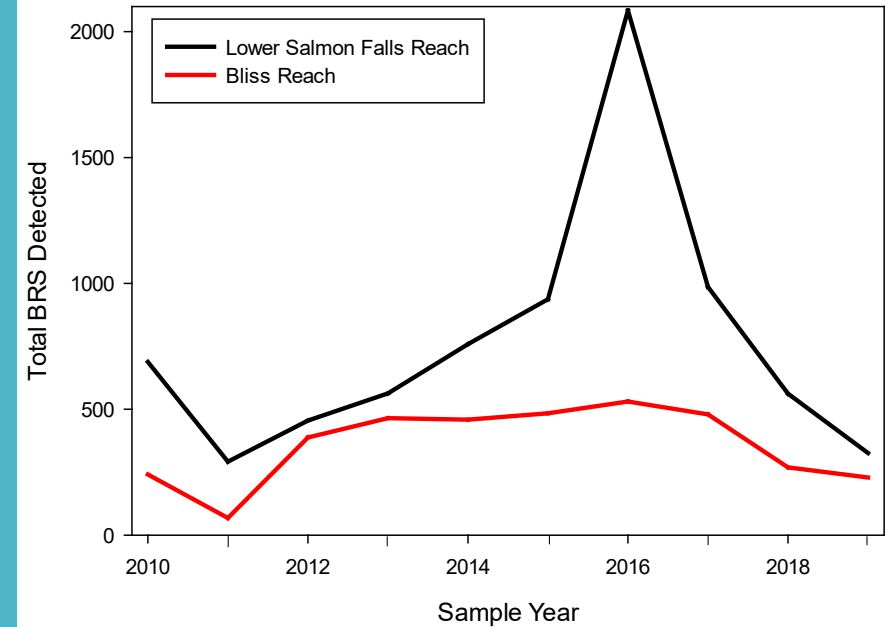


Figure 10. Land use east and hydraulically up-gradient of Snake River Farms using calculated one-year TOT capture zone.

Status:

- Most wide-spread of the listed snails;
- Large inter-annual variation in river populations* likely due to river dynamics (seasonal discharge);
- Monitored spring populations* show some declining trends;
- Recently discovered upstream population at Devil's Corral (upstream of Shoshone Falls);
- No fewer than 3 spring populations have become extirpated (Blue Lakes, Birch Cr. Sprs., Ellison Spr. #2).

*: Monitoring by IPCo.



Banbury Springs Limpet/Lanx (*Idaholanx fresti*)

Description:

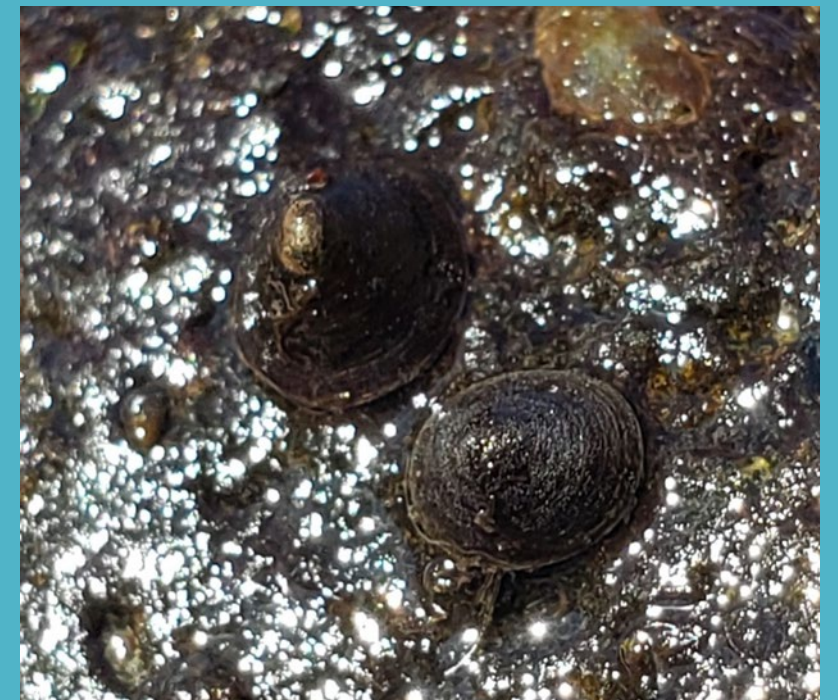
- Small, measuring up to 4-6.7 mm long, up to 4 mm high;
- Shell, conical in shape, lacking whorles;
- Species is hermaphroditic;
- Monotypic: only 1 species within the Genus, restricted to 4 small populations in Idaho.



Life History:

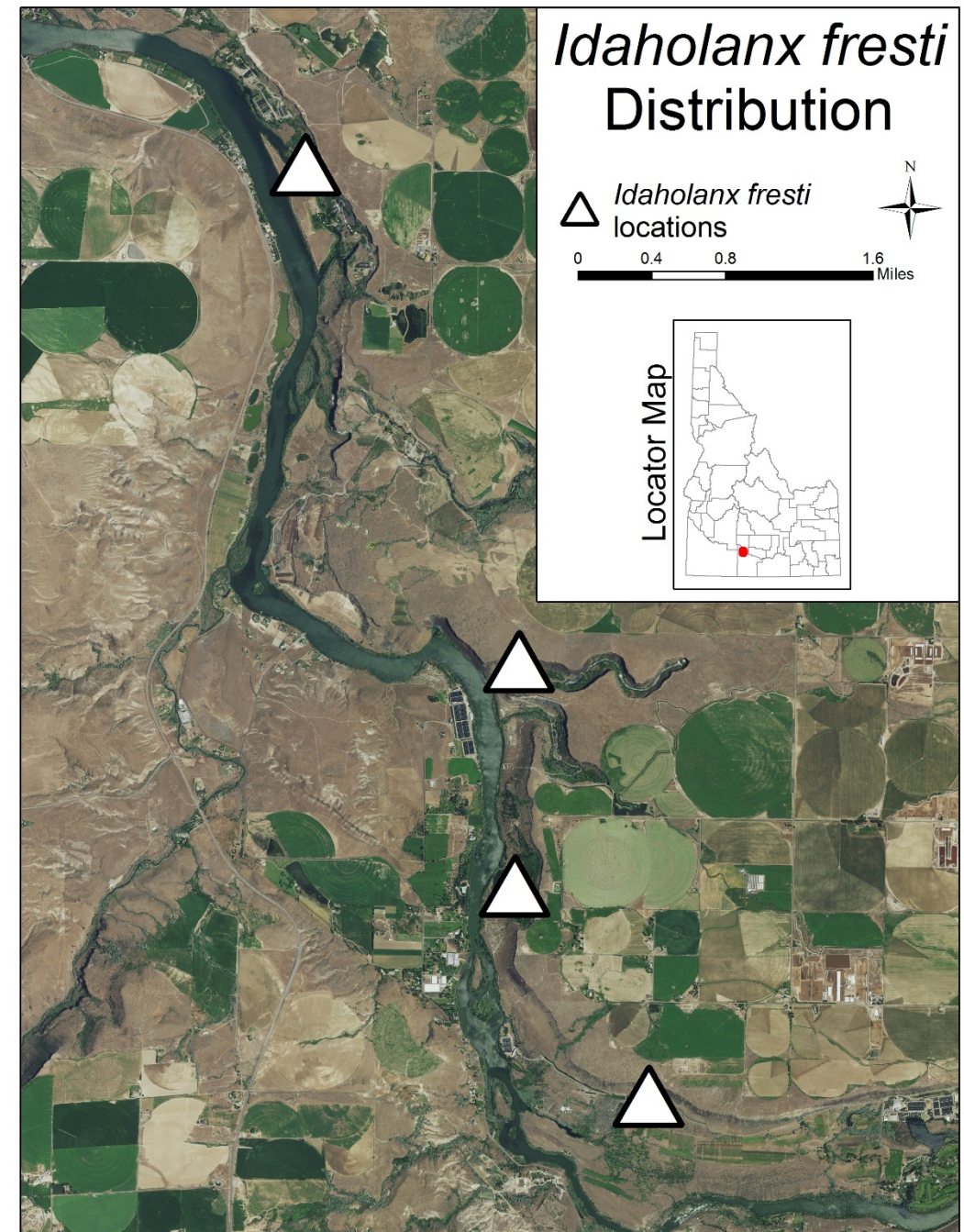
- Restricted to 4 springs derived from the ESPA*:
- Spring waters ranging from ~14-18 °C;
- Found on gravels, cobbles, and boulders without or limited fine sediments;
- Avoid areas with excessive aquatic vegetation;
- Feeds on epilithic diatoms (periphyton).

*ESPA: Eastern Snake Plain Aquifer



Distribution:

- Restricted to 4 ESPA springs in the Hagerman/Wendell area: Thousand Springs, Box Canyon Springs, Banbury Springs, and Briggs Springs.
- Habitats occupied by Bliss Rapids snail.



Threats:

- Water quality threats to ESPA;
- Declining aquifer (ESPA);
- Habitat destruction;
- Excessive fine sediments;
- Excessive macrophyte growth.

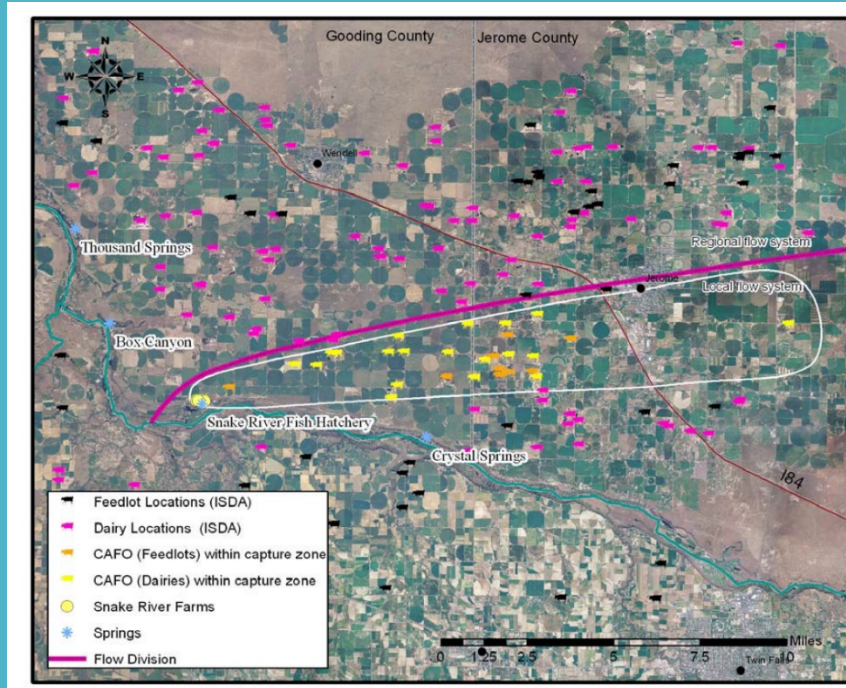
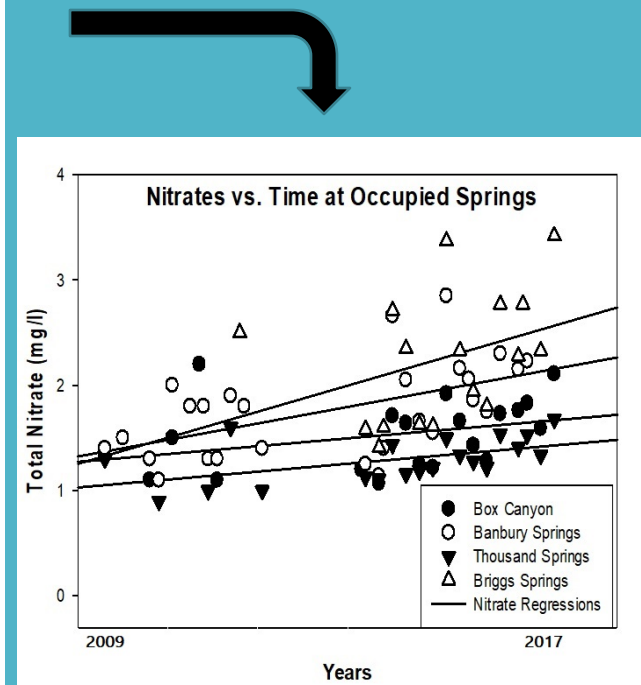


Figure 10. Land use east and hydraulically up-gradient of Snake River Farms using calculated one-year TOT capture zone.



IPCo. data

Reduced Instream Flow

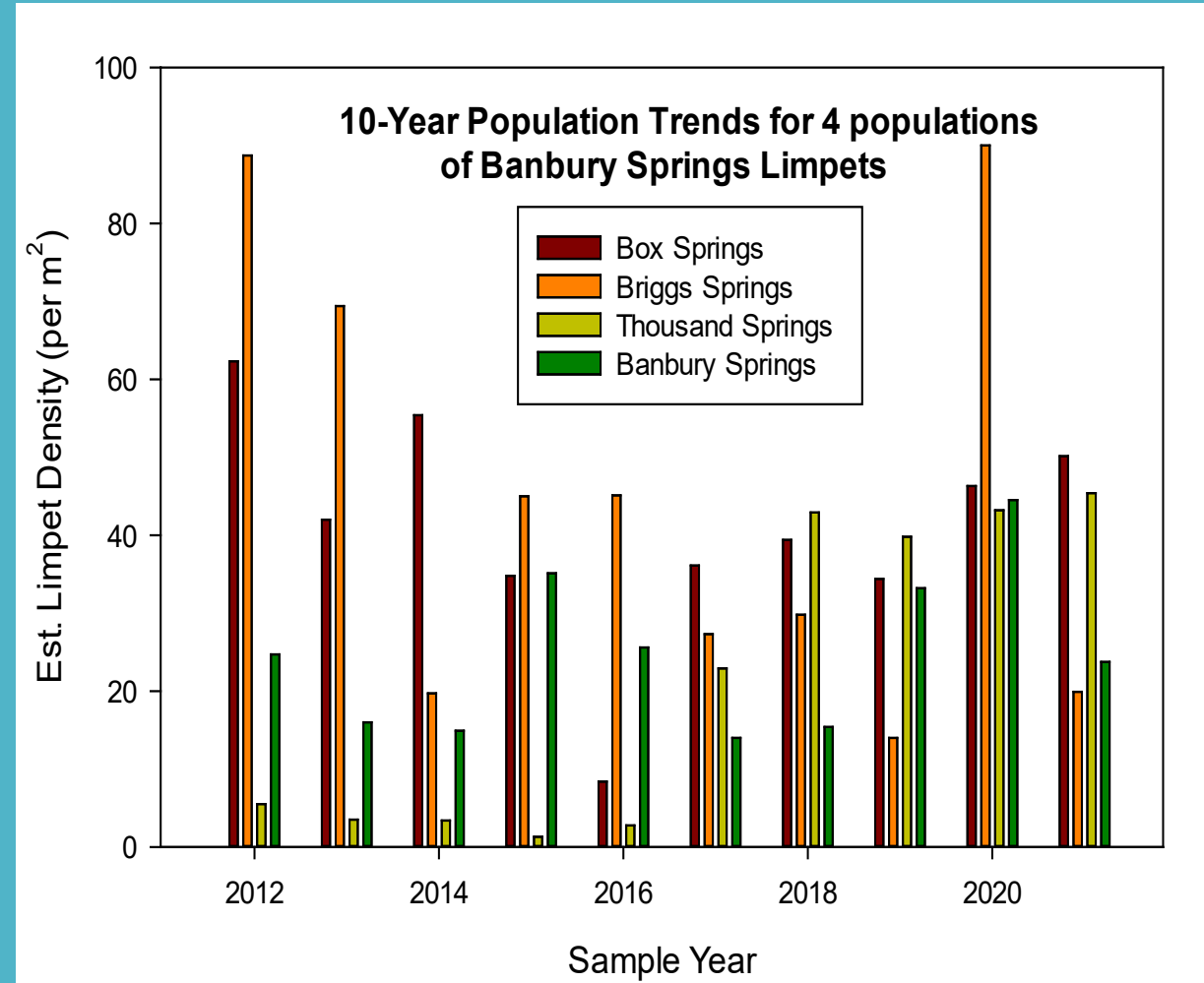


Excessive Nutrients



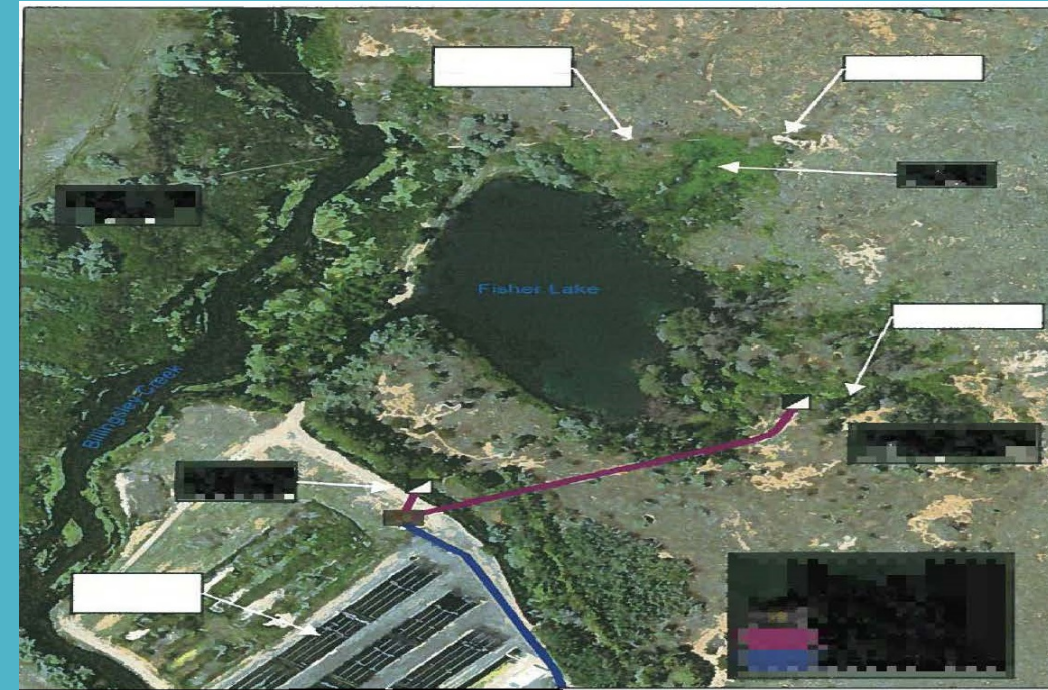
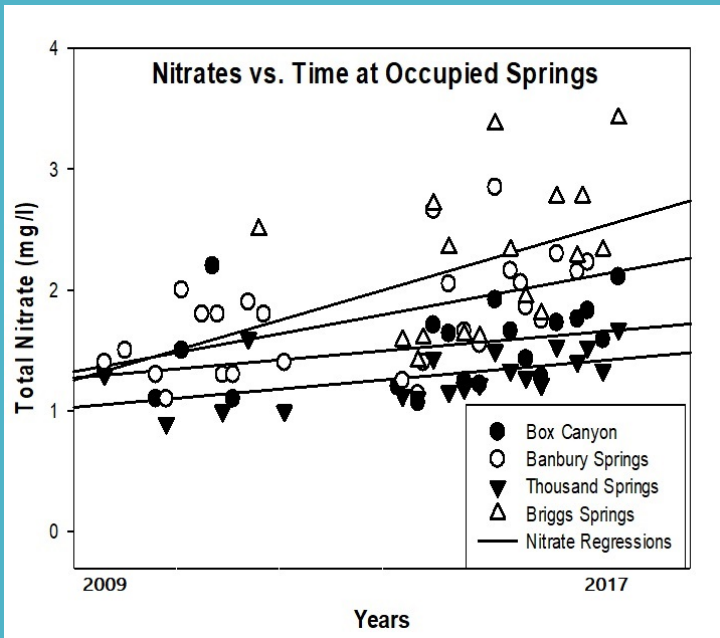
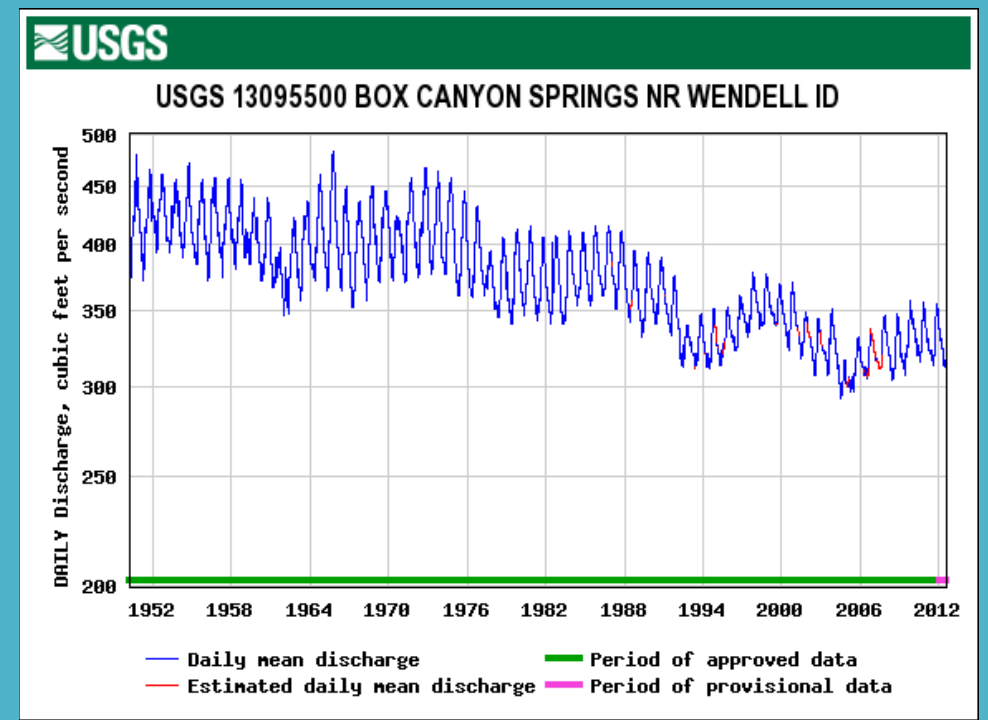
Status:

- All 4 populations have exhibited great interannual variation, cause for concern in small, isolated populations;
- The Thousand Springs population has seen improvements with active management (translocation and macrophyte control);
- Two of 3 known colonies at Briggs Springs have undergone severe declines as a result of human habitat alteration (water diversion, land clearing).



Conservation Needs - Springs:

- Stabilize groundwater and spring discharge (ESPA);
- Stabilize groundwater and spring water quality (ESPA);
- Protect occupied habitats from human alteration;
- Protect water quality in Snake River.



Questions?