


MBSS Herpetofauna Sampling












Why Sample them?

- Important part of MD's biodiversity/ecosystem
- RTE species
- Biological indicators

Long history of Herps in MBSS

- Sampled Since 1994
- Round 2- Incidental Observations
- Round 3- Stream salamanders, 15 min general search for other herpetofauna
- Protocols have changed slightly for Round 4

v. 2014

MBSS SUMMER FAUNA DATA SHEET

Page ☐ of ☐

SITE Watershed Code ☐☐☐☐ Segment ☐☐☐ Type ☐ Year ☐☐☐☐ Reviewer: First _____ / Second _____

STREAM SALAMANDERS

☐ None Observed

Species	Electrofishing Catch Adult	Electrofishing Catch Larva	Transect Catch Adult	Transect Catch Larva	Number Retained	Number Photos Taken

OTHER HERPETOFAUNA

☐ None Observed

Species	Lifestage Adult	Lifestage Larva	Lifestage Egg	Number Retained	Num. Photos Taken

MUSSELS

☐ None Observed

Species	Live	Dead	Number Retained	Num. Photos Taken

Corbicula LIVE ☐ DEAD ☐ NONE ☐

CRAYFISH

☐ None Observed

Crayfish Burrows (Absent, Present, Extensive) ☐

Species	Incidental Catch? (Y/N)	1st Pass Catch (Total)	2nd Pass Catch (Total)	Number Retained

COMMENTS: _____

v. 2014

MBSS STREAM SALAMANDER DATA SHEET

Page ☐ of ☐

SITE Watershed Code ☐☐☐☐ Segment ☐☐☐ Type ☐ Year ☐☐☐☐ Reviewer: First _____ / Second _____

DATE Year ☐☐ Month ☐☐ Day ☐☐

Seeps Present? (Y/N) ☐

Habitat Composition (%)

☐☐☐ Stream Corridor

☐☐☐ Seeps

	Stream Corridor	Seeps
All Available Habitat Sampled? (Y/N)	☐	☐
Time Searched (Max 60 min)	Minutes ☐☐ Seconds ☐☐	Minutes ☐☐ Seconds ☐☐
Available Habitat Left Unsampled (%)	☐☐	☐☐

COMMENTS

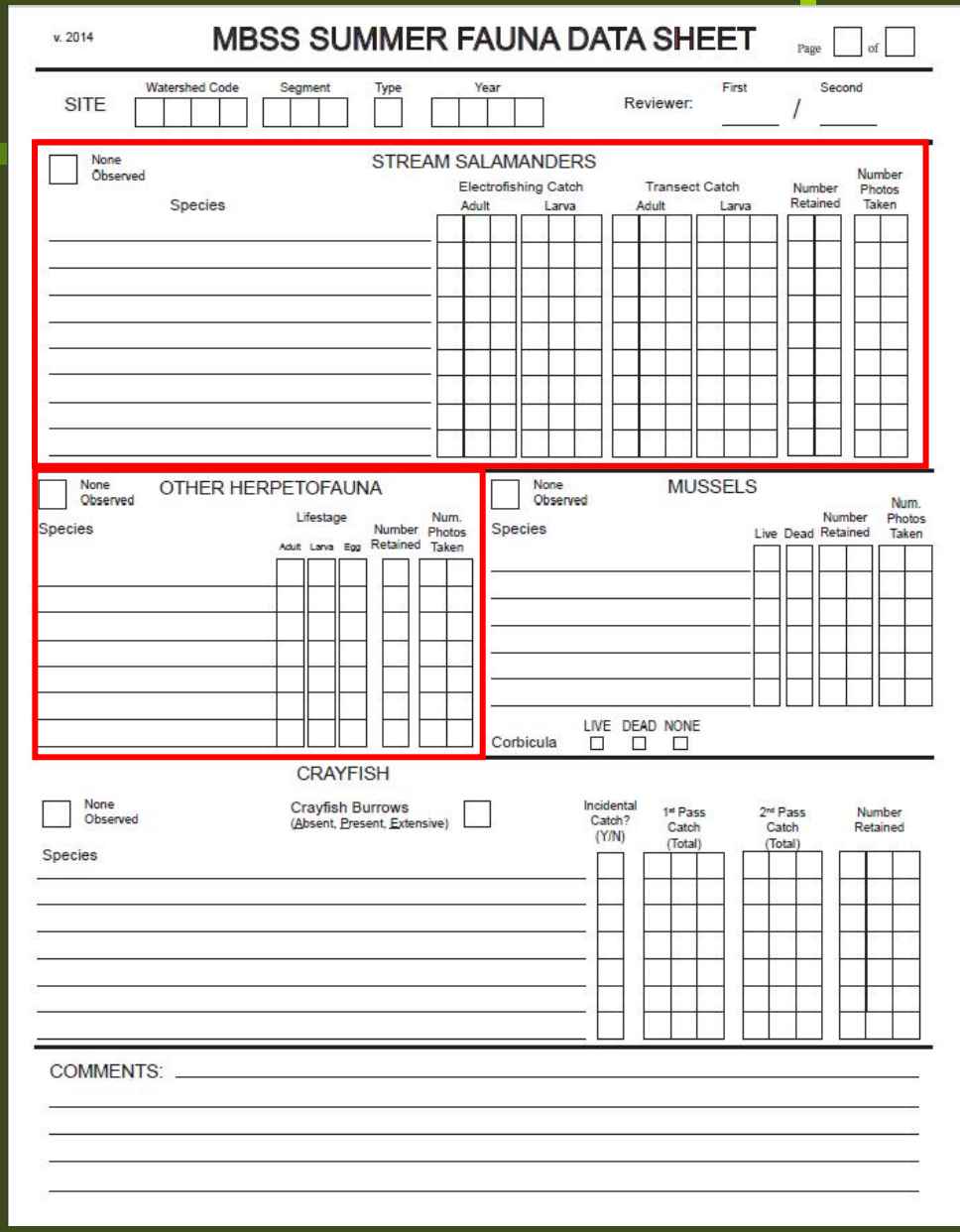
☐ None Observed

SPECIES	ADULTS Abundance Stream Corridor	ADULTS Abundance Seeps	ADULTS Num. Photos Taken	LARVAE Abundance Stream Corridor	LARVAE Abundance Seeps	LARVAE Num. Photos Taken

Protocols

1. Incidental observations
2. Stream salamander search

There is no longer a 15min general herp search required - as there was in Round 3



v. 2014

MBSS SUMMER FAUNA DATA SHEET

Page ☐ of ☐

SITE Watershed Code | Segment | Type | Year

Reviewer: First / Second

STREAM SALAMANDERS

☐ None Observed

Species	Electrofishing Catch: Adult	Electrofishing Catch: Larva	Transect Catch: Adult	Transect Catch: Larva	Number Retained	Number Photos Taken

OTHER HERPETOFAUNA

☐ None Observed

Species	Lifestage: Adult	Lifestage: Larva	Lifestage: Egg	Number Retained	Num. Photos Taken

MUSSELS

☐ None Observed

Species	Live	Dead	Number Retained	Num. Photos Taken

Corbicula LIVE ☐ DEAD ☐ NONE ☐

CRAYFISH

☐ None Observed

Crayfish Burrows (Absent, Present, Extensive) ☐

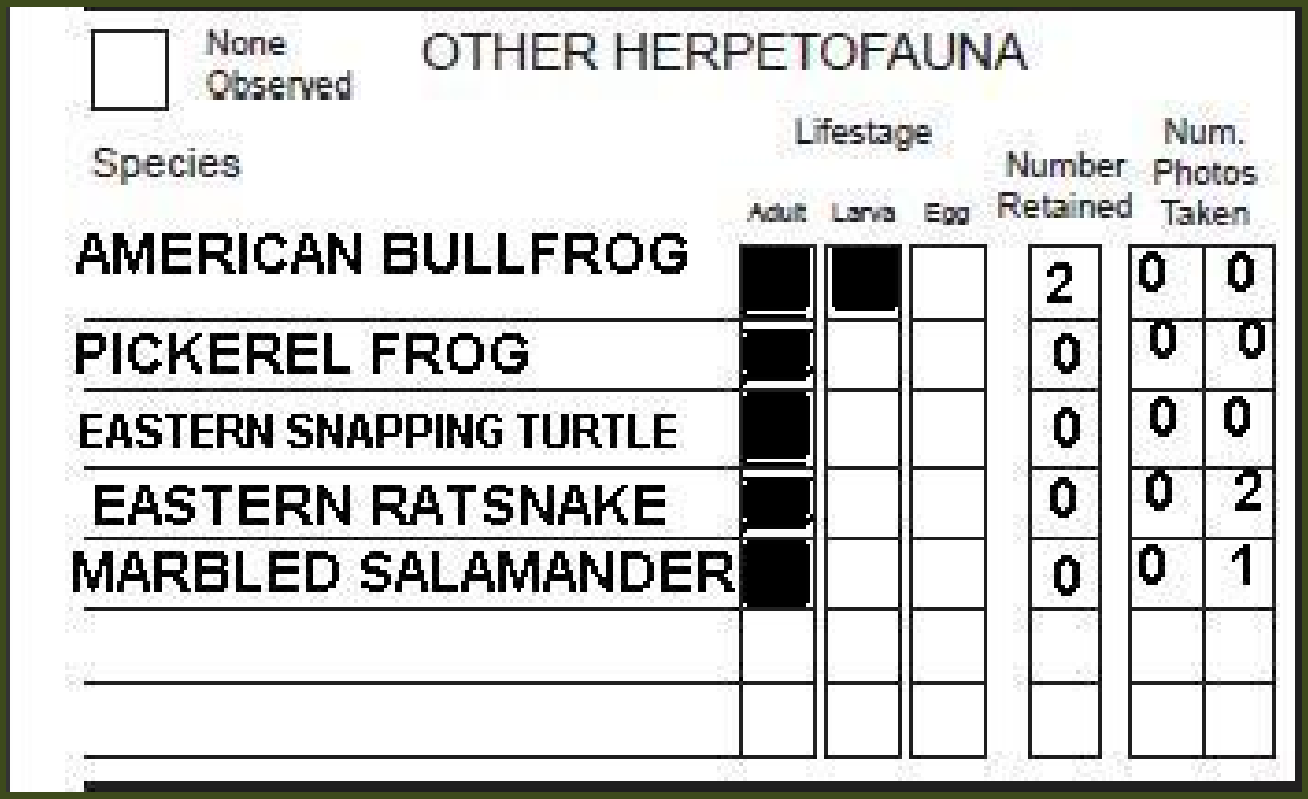
Species	Incidental Catch? (Y/N)	1st Pass Catch (Total)	2nd Pass Catch (Total)	Number Retained

COMMENTS:

Incidental Collection

- Any observation while sampling or accessing MBSS sites
- Record **full common name** and **lifestage data**
- “Other Herpetofauna” portion of the Summer Fauna Datasheet

Incidental Collections



None Observed

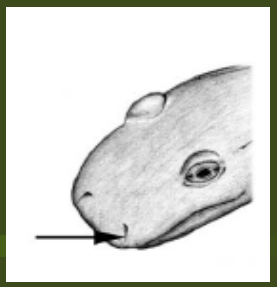
OTHER HERPETOFAUNA

Species	Lifestage: Adult	Lifestage: Larva	Lifestage: Egg	Number Retained	Num. Photos Taken	
AMERICAN BULLFROG	■	■		2	0	0
PICKEREL FROG	■			0	0	0
EASTERN SNAPPING TURTLE	■			0	0	0
EASTERN RATSNAKE	■			0	0	2
MARBLED SALAMANDER	■			0	0	1

Stream Salamanders

- Widely distributed
- Abundant
- Life history linked to streams
- Physiology (moist, permeable skin required for respiration)
- Respond to multiple stressors
- Good indicators of environmental health:
  - Current Protocols will support the use of a Stream Salamander Index of Biotic Integrity (SS-IBI)

Stream Salamanders



- Family **Plethodontidae** (lungless salamanders)
  - *Pseudotriton spp.*
    - Northern red
    - Eastern mud
  - *Gyrinophilus spp.*
    - Northern spring
  - *Eurycea spp.*
    - Northern two-lined
    - Long-tailed
  - *Desmognathus spp.*
    - Northern dusky
    - Allegheny mountain dusky
    - Seal

Stream Salamander Protocol

- Search for salamanders throughout the 75 m sampled reach
- Follow wetted edge of the stream, follow any seeps for 10m from channel confluence

Stream Salamander Protocol

- Search on BOTH sides of the stream
  - Focus on best available habitat/cover objects
    - Cobble, small boulders, logs, woody debris, human refuse, etc.
    - Disturb leaf litter; rake and probe mud
- Search is limited to 60 minutes
  - Record an estimate of the % of habitat remaining if all is not searched in 1hr.
- Emphasis is on the stream channel

Best available habitat - cover objects

Record search results on Stream Salamander Data Sheet

v. 2014

MBSS STREAM SALAMANDER DATA SHEET

Page ☐ of ☐

SITE — Watershed Code ☐☐☐☐ Segment ☐☐☐ Type ☐ Year ☐☐☐☐

Reviewer: First ____ / Second ____

DATE — Year ☐☐ Month ☐☐ Day ☐☐

Seeps Present? (Y/N) ☐

Habitat Composition (%)

☐☐☐ Stream Corridor

☐☐☐ Seeps

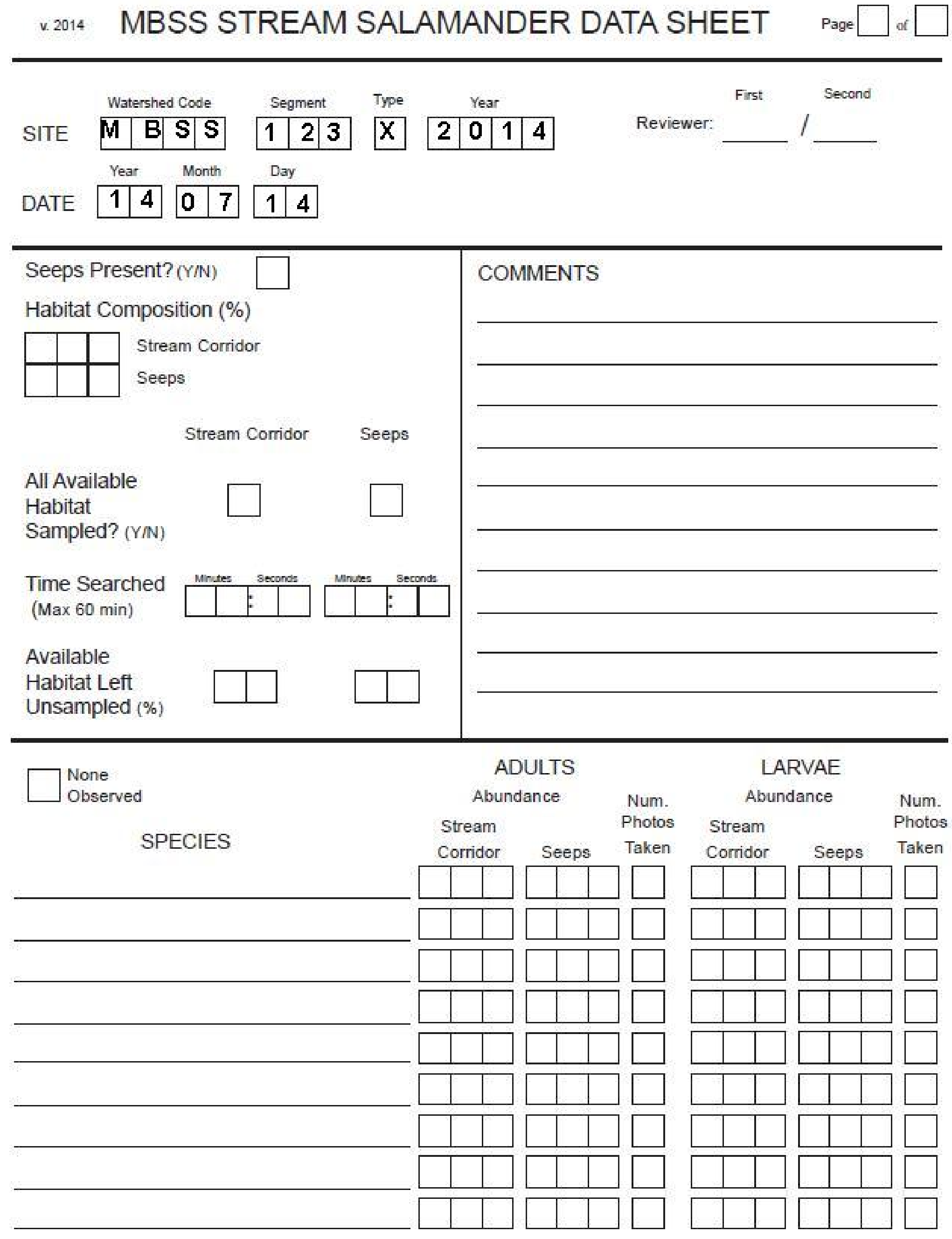
	Stream Corridor	Seeps
All Available Habitat Sampled? (Y/N)	☐	☐
Time Searched (Max 60 min)	Minutes ☐☐ : Seconds ☐☐	Minutes ☐☐ : Seconds ☐☐
Available Habitat Left Unsampled (%)	☐☐	☐☐

COMMENTS

☐ None Observed

SPECIES	ADULTS Abundance Stream Corridor	ADULTS Abundance Seeps	ADULTS Num. Photos Taken	LARVAE Abundance Stream Corridor	LARVAE Abundance Seeps	LARVAE Num. Photos Taken

Record search results on Stream Salamander Data Sheet



v. 2014 MBSS STREAM SALAMANDER DATA SHEET Page ☐ of ☐

	Watershed Code	Segment	Type	Year	Reviewer: First / Second
SITE	M B S S	1 2 3	X	2 0 1 4	____ / ____

	Year	Month	Day
DATE	1 4	0 7	1 4

Seeps Present? (Y/N) ☐

Habitat Composition (%)

Stream Corridor

Seeps

	Stream Corridor	Seeps
All Available Habitat Sampled? (Y/N)	☐	☐
Time Searched (Max 60 min)	Minutes : Seconds	Minutes : Seconds
Available Habitat Left Unsampled (%)	☐☐	☐☐

COMMENTS

☐ None Observed

SPECIES	ADULTS Abundance Stream Corridor	ADULTS Abundance Seeps	ADULTS Num. Photos Taken	LARVAE Abundance Stream Corridor	LARVAE Abundance Seeps	LARVAE Num. Photos Taken

Separate times/habitats between stream corridor and seeps, if present

v. 2014 **MBSS STREAM SALAMANDER DATA SHEET** Page ☐ of ☐

SITE — Watershed Code: M B S S | Segment: 1 2 3 | Type: X | Year: 2 0 1 4 | Reviewer: First _____ / Second _____

DATE — Year: 1 4 | Month: 0 7 | Day: 1 4

Seeps Present? (Y/N) Y

Habitat Composition (%)

7 0	Stream Corridor
3 0	Seeps

COMMENTS

	Stream Corridor	Seeps
All Available Habitat Sampled? (Y/N)	Y	N
Time Searched (Max 60 min)	Minutes 3 2 : Seconds 1 5	Minutes 2 7 : Seconds 4 5
Available Habitat Left Unsampled (%)	0 0	2 5

☐ None Observed

SPECIES	ADULTS Abundance: Stream Corridor	ADULTS Abundance: Seeps	ADULTS Num. Photos Taken	LARVAE Abundance: Stream Corridor	LARVAE Abundance: Seeps	LARVAE Num. Photos Taken

Record comments if necessary

v. 2014 **MBSS STREAM SALAMANDER DATA SHEET** Page ☐ of ☐

SITE — Watershed Code: M B S S | Segment: 1 2 3 | Type: X | Year: 2 0 1 4 | Reviewer: First _____ / Second _____

DATE — Year: 1 4 | Month: 0 7 | Day: 1 4

Seeps Present? (Y/N) Y

Habitat Composition (%)

7 0	Stream Corridor
3 0	Seeps

	Stream Corridor	Seeps
All Available Habitat Sampled? (Y/N)	Y	N
Time Searched (Max 60 min)	Minutes 3 2 : Seconds 1 5	Minutes 2 7 : Seconds 4 5
Available Habitat Left Unsampled (%)	0 0	2 5

COMMENTS

MULTIPLE SEEPS, 60 MINUTES ELAPSED BEFORE ALL COULD BE SEARCHED

25% OF AVAILABLE SEEP HABITAT REMAINED UNSEARCHED

☐ None Observed

SPECIES	ADULTS Abundance: Stream Corridor	ADULTS Abundance: Seeps	ADULTS Num. Photos Taken	LARVAE Abundance: Stream Corridor	LARVAE Abundance: Seeps	LARVAE Num. Photos Taken

Record species, if observed

v. 2014 **MBSS STREAM SALAMANDER DATA SHEET** Page ☐ of ☐

SITE — Watershed Code: M B S S | Segment: 1 2 3 | Type: X | Year: 2 0 1 4 | Reviewer: First _____ / Second _____

DATE — Year: 1 4 | Month: 0 7 | Day: 1 4

Seeps Present? (Y/N): Y

Habitat Composition (%)

- 7 0 Stream Corridor
- 3 0 Seeps

	Stream Corridor	Seeps
All Available Habitat Sampled? (Y/N)	Y	N
Time Searched (Max 60 min)	Minutes 3 2 : Seconds 1 5	Minutes 2 7 : Seconds 4 5
Available Habitat Left Unsampled (%)	0 0	2 5

COMMENTS

MULTIPLE SEEPS, 60 MINUTES ELAPSED BEFORE ALL COULD BE SEARCHED

25% OF AVAILABLE SEEP HABITAT REMAINED UNSEARCHED

☐ None Observed

SPECIES	ADULTS Abundance: Stream Corridor	ADULTS Abundance: Seeps	ADULTS Num. Photos Taken	LARVAE Abundance: Stream Corridor	LARVAE Abundance: Seeps	LARVAE Num. Photos Taken
NORTHERN TWO-LINED SALAMANDER						
NORTHERN DUSKY SALAMANDER						
NORTHERN RED SALAMANDER						

…and counts for adults/larvae, corridor/seeps

v. 2014 **MBSS STREAM SALAMANDER DATA SHEET** Page ☐ of ☐

SITE — Watershed Code: M B S S | Segment: 1 2 3 | Type: X | Year: 2 0 1 4 | Reviewer: First _____ / Second _____

DATE — Year: 1 4 | Month: 0 7 | Day: 1 4

Seeps Present? (Y/N): Y

Habitat Composition (%)

7 0	Stream Corridor
3 0	Seeps

	Stream Corridor	Seeps
All Available Habitat Sampled? (Y/N)	Y	N
Time Searched (Max 60 min)	Minutes 3 2 : Seconds 1 5	Minutes 2 7 : Seconds 4 5
Available Habitat Left Unsampled (%)	0 0	2 5

COMMENTS

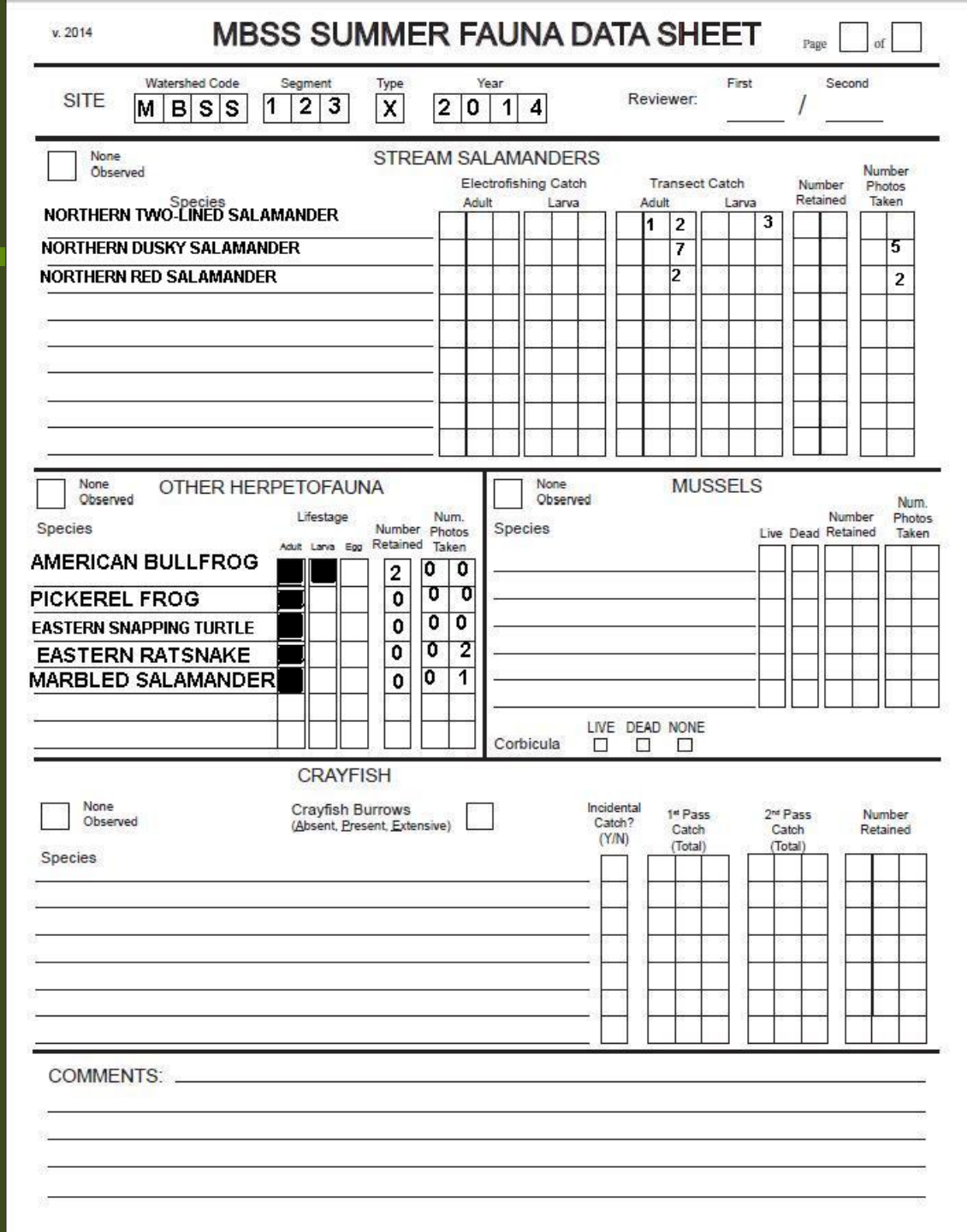
MULTIPLE SEEPS, 60 MINUTES ELAPSED BEFORE ALL COULD BE SEARCHED

25% OF AVAILABLE SEEP HABITAT REMAINED UNSEARCHED

☐ None Observed

SPECIES	ADULTS Abundance: Stream Corridor	ADULTS Abundance: Seeps	ADULTS Num. Photos Taken	LARVAE Abundance: Stream Corridor	LARVAE Abundance: Seeps	LARVAE Num. Photos Taken
NORTHERN TWO-LINED SALAMANDER	12		0	3		0
NORTHERN DUSKY SALAMANDER	7		5			
NORTHERN RED SALAMANDER		2	2			

Add salamander search results to Summer Fauna Sheet



v. 2014

MBSS SUMMER FAUNA DATA SHEET

Page ☐ of ☐

SITE | Watershed Code: MBSS | Segment: 123 | Type: X | Year: 2014 | Reviewer: First ____ / Second ____

STREAM SALAMANDERS

☐ None Observed

Species	Electrofishing Catch Adult	Electrofishing Catch Larva	Transect Catch Adult	Transect Catch Larva	Number Retained	Number Photos Taken
NORTHERN TWO-LINED SALAMANDER			12	3		
NORTHERN DUSKY SALAMANDER			7			5
NORTHERN RED SALAMANDER			2			2

OTHER HERPETOFAUNA

☐ None Observed

Species	Lifestage: Adult	Lifestage: Larva	Lifestage: Egg	Number Retained	Num. Photos Taken
AMERICAN BULLFROG	■	■		2	00
PICKEREL FROG	■			0	00
EASTERN SNAPPING TURTLE	■			0	00
EASTERN RATSNAKE	■			0	02
MARBLED SALAMANDER	■			0	01

MUSSELS

☐ None Observed

Species	Live	Dead	Number Retained	Num. Photos Taken

Corbicula: LIVE ☐ DEAD ☐ NONE ☐

CRAYFISH

☐ None Observed

Crayfish Burrows (Absent, Present, Extensive) ☐

Species	Incidental Catch? (Y/N)	1st Pass Catch (Total)	2nd Pass Catch (Total)	Number Retained

COMMENTS: ____

… as well as any electrofishing catches

v. 2014

MBSS SUMMER FAUNA DATA SHEET

Page ☐ of ☐

SITE | Watershed Code: MBSS | Segment: 123 | Type: X | Year: 2014 | Reviewer: First ____ / Second ____

STREAM SALAMANDERS

☐ None Observed

Species	Electrofishing Catch Adult	Electrofishing Catch Larva	Transect Catch Adult	Transect Catch Larva	Number Retained	Number Photos Taken
NORTHERN TWO-LINED SALAMANDER	4	18	12	3		
NORTHERN DUSKY SALAMANDER			7			5
NORTHERN RED SALAMANDER		3	2			2
NORTHERN SPRING SALAMANDER		1				1

OTHER HERPETOFAUNA

☐ None Observed

Species	Lifestage: Adult	Lifestage: Larva	Lifestage: Egg	Number Retained	Num. Photos Taken
AMERICAN BULLFROG	■	■		2	00
PICKEREL FROG	■			0	00
EASTERN SNAPPING TURTLE	■			0	00
EASTERN RATSNAKE	■			0	02
MARBLED SALAMANDER	■			0	01

MUSSELS

☐ None Observed

Species	Live	Dead	Number Retained	Num. Photos Taken

Corbicula: LIVE ☐ DEAD ☐ NONE ☐

CRAYFISH

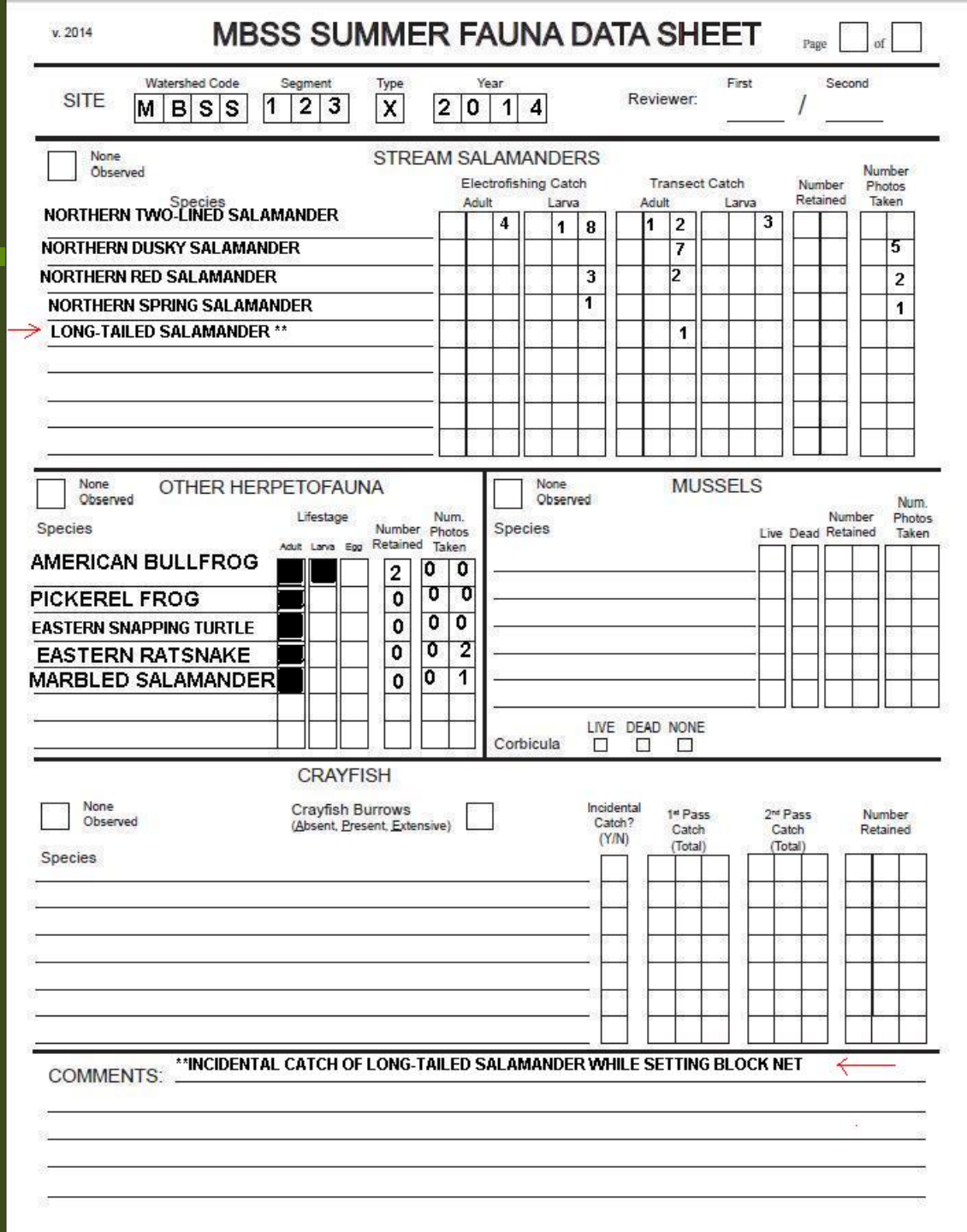
☐ None Observed

Crayfish Burrows (Absent, Present, Extensive) ☐

Species	Incidental Catch? (Y/N)	1st Pass Catch (Total)	2nd Pass Catch (Total)	Number Retained

COMMENTS: ____

Incidental catches (not in targeted search or electrofishing) of STREAM salamanders should be recorded in the transect count with an explanatory comment



v. 2014

MBSS SUMMER FAUNA DATA SHEET

Page ☐ of ☐

SITE | Watershed Code: MBSS | Segment: 123 | Type: X | Year: 2014 | Reviewer: First ____ / Second ____

STREAM SALAMANDERS

☐ None Observed

Species	Electrofishing Catch Adult	Electrofishing Catch Larva	Transect Catch Adult	Transect Catch Larva	Number Retained	Number Photos Taken
NORTHERN TWO-LINED SALAMANDER	4	18	12	3		5
NORTHERN DUSKY SALAMANDER		3	7			2
NORTHERN RED SALAMANDER		1	2			1
NORTHERN SPRING SALAMANDER			1			
LONG-TAILED SALAMANDER **						

OTHER HERPETOFAUNA

☐ None Observed

Species	Lifestage: Adult	Lifestage: Larva	Lifestage: Egg	Number Retained	Num. Photos Taken
AMERICAN BULLFROG	■	■		2	0 0
PICKEREL FROG	■			0	0 0
EASTERN SNAPPING TURTLE	■			0	0 0
EASTERN RATSNAKE	■			0	0 2
MARBLED SALAMANDER	■			0	0 1

MUSSELS

☐ None Observed

Species	Live	Dead	Number Retained	Num. Photos Taken

Corbicula: LIVE ☐ DEAD ☐ NONE ☐

CRAYFISH

☐ None Observed

Crayfish Burrows (Absent, Present, Extensive) ☐

Species	Incidental Catch? (Y/N)	1st Pass Catch (Total)	2nd Pass Catch (Total)	Number Retained

COMMENTS: **INCIDENTAL CATCH OF LONG-TAILED SALAMANDER WHILE SETTING BLOCK NET

Other Considerations

1. Taxonomic Identification/Frog Calls
2. Sampleability
3. Photographic vouchers
4. Proper handling

Sampleability

- Incidental observations always recorded
- General search conducted at any MBSS site that can be safely accessed
  - Even if electrofishing cannot be conducted
- Fill in sampleability code if unable to sample

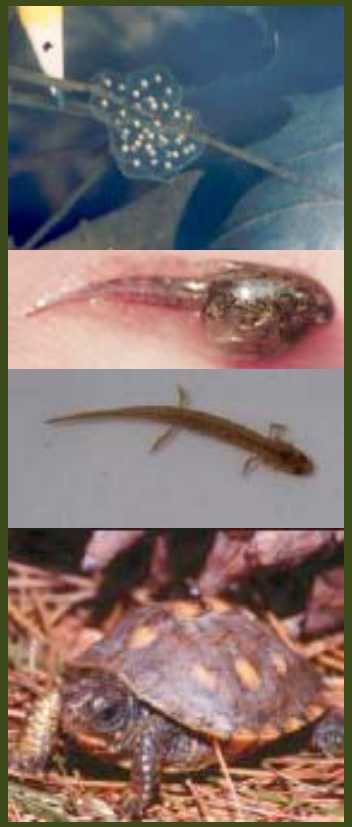
SAMPLEABILITY

s = Sampleable
1 = Dry Streambed
2 = Too Deep
3 = Marsh, no defined channel
4 = Excessive Riparian Vegetation
5 = Impoundment
6 = Tidally Influenced
7 = Permission Denied
8 = Unsafe (describe in comments)
9 = Beaver
10 = Other _____

☐ Electrofishing
☐ Habitat
☐ Water Quality
☐ Herpetofauna
☐ Salamanders
☐ Crayfishes
☐ Mussels
☐ Aquatic Plants
☐ Exotic Plants

Photographic Vouchers

1. Listed Species
   - Rare, Threatened, or Endangered
   - In Need of Conservation
2. Anomalies
3. Photographic voucher collection
   - MBSS Crews



Photographic Voucher Collection

- In lieu of preserving specimens
- At least **five** individuals of each species encountered during sampling
- Should show “key features”

Number	PHOTODOCUMENTATION	Voucher (Y/N)
☐☐☐		☐
☐☐☐		☐
☐☐☐		☐
☐☐☐		☐

Proper handling and restraint

- Frogs and Toads
  - Grasp at waist with legs extended
- Salamanders and lizards
  - Small – entire body cupped hands
  - Large – grasp in middle of body
- Snakes
  - Generally should be avoided
  - Support weight at multiple locations
- Larvae
  - Prevent damage to gills