WCFO FIELD REPORT

From: Kevin Wheeler and Bevin McCormick
Date: July 8, 2014
Subject: Boreal Toad Inventory Surveys

INTRODUCTION

The boreal toad (*Anaxyrus boreas*) is a Utah State species of special concern, as its historic range and numbers have been decreasing in recent years. In 2012, the US Fish and Wildlife Service determined in a 90-day finding that eastern populations of boreal toad, including those in Utah, may be warranted for listing as endangered. Habitat loss and degradation, disease, and environmental contaminants are among the known factors causing these declines. The Utah Division of Wildlife Resources (UDWR) began monitoring efforts in 1994. These efforts resulted in designated localities to monitor breeding on the Paunsaugunt Plateau, Monroe Mountain, Boulder Mountain, and Thousand Lake Mountain. Current conservation objectives are to continue annual monitoring of these breeding localities for evidence of successful reproduction, and to conduct inventory surveys to further delineate population range throughout southern Utah.

A proposal to conduct extensive conifer removal through harvest and prescribed burn on Monroe Mountain, in an effort to restore aspen stands, has placed emphasis on the need to better delineate boreal toad distribution, as well as define habitats required by toads in order to protect them. Surveys were conducted on the Manning Creek, Koosharem Creek, Monroe Creek, Dry Creek, and Cottonwood Creek drainages on Monroe Mountain from July 8 through July 12, 2014. Most of the sites surveyed are primarily small tributaries that had never been surveyed previously, though boreal toads have been found in most of these drainages. To conduct these surveys, the Utah Division of Wildlife Resources teamed up with personnel and volunteers from Grand Canyon Trust and Utah's Hogle Zoo. Observers included Kevin K. Wheeler and Bevin A. McCormick from UDWR; Elizabeth B. Larson, Patrick J. Theobald, Ashley A. Welton, Michelle L. Madson, Kylee C. Mukherjee, and Kelsey G.Volk from Utah's Hogle Zoo; and Mary O'Brien, Andrew T. Mount, Michael Y. Chizhoc, Bryn N. Gerson, Emmi W. Colunga, Frank J. Viehmann, and Barbara E. Gysel from the Grand Canyon Trust. During these surveys, one or more boreal toads were observed at the following sites: Manning/Barney Confluence, White Ledge Spring, Manning Creek, Left Fork Dry Creek, Willow Spring, Monroe Creek, and Annabella Pond 1.

METHODS

Inventory surveys were conducted by visiting previously designated localities. Surveys consisted of searching all potential habitat. All available habitat along banks was searched for adult and juvenile toads, and shallow water along edges and slow-moving areas were searched for eggs, tadpoles, and toads. Wide marshy areas were surveyed with parallel transects to achieve complete coverage. All amphibian species, numbers of individuals, life stage, sex, and snout-vent length (SVL) in millimeters, were recorded. Chytrid swab samples were taken from most observed toads. All surveys were completed during daylight hours.

RESULTS

Breeding Surveys

Barney Kettle
Date: 8 July 2014
Elevation: 2979 m
Observers: KKW, BAM
No amphibians were observed. This site was re-surveyed on July 23 with no amphibians observed. This is the fourth consecutive year in which no reproduction was observed at Barney Kettle, though, historically, it was an active breeding site. See Figure 6.

Manning/Barney Confluence
Date: 8 July 2014
Elevation: 2874 m
Observers: KKW, BAM
One adult boreal toad was observed with a SVL of 79mm. No evidence of recent beaver activity was observed. The water level in the beaver pond was lower than usual. This site has been surveyed every year since 1995 (excluding 1996 and 1999). Every year adults, juveniles, tadpoles, and/or egg strands of boreal toads have been observed. This survey yielded the lowest number of observed boreal toads (at any stage) since 1997. (Photo from 2013) See Figure 6.

Deep Lake
Date: 12 July 2014
Elevation: 3027 m
Observers: KKW, ATM, AAW, EWC, BAM, PJT, MLM, KCM, KGV, MOB, BNG, FJV, BEG
No boreal toads were observed at Deep Lake. Thirteen boreal chorus frogs, one garter snake, and five tiger salamander tadpoles were observed. Surveys have been conducted at Deep Lake every year since 2000 (14 previous surveys total). Among those previous surveys, boreal toads were observed at Deep Lake every year except for three, two of which were in the last three years. In the survey conducted in 2013, seven adults and six egg strands were observed. See Figure 6.

Inventory Surveys

Manning Creek Drainage

White Ledge Spring
Date: 9 July 2014
Elevation: 2862 m
Observers: KKW, MLM, AAW, FJV, MOB, BNG, MYC
One dead boreal toad was observed. One adult and four juvenile garter snakes were observed. This was the first survey performed at this site. See Figure 1 for a map of this site.

Big Flat
Date: 9 July 2014
Elevation: 2879m
Observers: KKW, MLM, AAW, FJV, MOB, BNG, MYC
Topographic maps of this area indicated a creek at this site; however, the creek was dry. A length of 0.91km of this site was walked, but no water was found. There were no indications that this site is good boreal toad habitat. See Figure 1 for a map of the area walked.

East Fork Manning Creek
Date: 10 July 2014
Elevation: 2882 m
Observers: BAM, EBL, EWC, FJV, MLM, AAW, MYC
No amphibians were observed at this site. A small section was surveyed previously in 1998, but this was the first time the majority of this site was surveyed. The lower section of East Fork of Manning Creek was grassy and marshy, with two or three small creek channels in a few sections. The grassy sections extended approximately 5-15 meters from the banks of the main creek channel. Evidence of very heavy disturbance due to grazing was seen throughout the site including large amounts of elk and cow droppings and many hoof marks. Aside from the heavy grazing, this area is potentially good boreal toad habitat. See Figure 1 for a map of this site.

Manning Creek
Date: 10 July 2014
Elevation: 2878 m
Observers: BAM, EBL, EWC, FJV, MLM, AAW, MYC
One boreal toad was observed with a SVL of 85 mm. One chytrid sample was taken from the toad. In this survey, Manning Creek was surveyed from the bottom of the Manning/Barney Confluence to upstream of the Collins Creek inflow. Manning Creek was surveyed previously in 1997 and 2001. In 1997, tadpoles and adult boreal toads were observed by the Beaver Dam Complexes. In 2001, tadpoles and boreal toads were observed downstream of the beaver complexes in Manning Creek. See Figure 1 for a map of the surveyed site.

Dry Creek Drainage

Left Fork Dry Creek
Date: 9 July 2014
Elevation: 2679 m
Observers: KKW, MLM, AAW, FJV, MOB, BNG, MYC
Two adult boreal toads were observed (SVL: 90mm, 84mm). Two chytrid samples were taken from these toads. One garter snake was observed. This was the first survey performed at this site. See Figure 2 for a map of this site.

Willow Spring
Date: 9 July 2014
Elevation: 2880 m
Observers: KKW, MLM, AAW, FJV, MOB, BNG, MYC
Three boreal toads were observed (SVL: 89 mm, 88 mm, 96 mm). Three chytrid samples were taken from these toads. One garter snake was also observed. This was the first survey performed at this site. One potential breeding pond was observed near Willow Spring. See Figure 2 for a map of this site.

Koosharem Creek Drainage

Milos Kitchen
Date: 9 July 2014
Elevation: 2675 m
Observers: BAM, EBL, EWC, ATM, KGV, BEG, KCM, PJT
No amphibians were observed. This was the first survey performed at this site. Six garter snakes were observed. The top of the survey site had little elevation change and a thin, shallow stream (less than 1m across, less than 1ft deep) with marshy, grassy areas extending approximately 2-10 meters from the stream banks. This area is potentially good boreal toad habitat. See Figure 3 for a map of this site.

Monroe Creek Drainage

Monroe Creek
Date: 10 July 2014
Elevation: 3142 m
Observers: KKW, MOB, KGB, ATM, BNG, PJT, BEG, KCM
Two boreal toads were observed (SVL: 78 mm, 90 mm). Two chytrid samples were taken from these toads. One garter snake was also observed. This site was surveyed previously in 2001, and four adult, six juvenile, and 359 tadpole boreal toads were observed. See Figure 4 for a map of this site.

Nielsen Canyon
Date: 11 July 2014
Elevation: 3163 m
Observers: BAM, MLM, MYC, AAW, FJV, PJT, BNG
No amphibians were observed at this site. This was the first survey performed at this site. Due to the remoteness of this location, time restraints, and some impassable sections, only part of Nielsen Canyon (starting at the very top of the canyon and working down) was surveyed. See Figure 4 for a map of the surveyed area.

Sage Flat Creek
Date: 11 July 2014
Elevation: 2814 m
Observers: KKW, MOB, EBL, KCM, EWC, BEG, KGV, ATM
No amphibians were observed at Sage Flat Creek. This was the first survey performed at this site. See Figure 4 for a map of this site.

Eagle Flat Creek
Date: 11 July 2014
Elevation: 2837 m
Observers: KKW, MOB, EBL, KCM, EWC, BEG, KGV, ATM
No amphibians were observed at Eagle Flat Creek. This was the first survey performed at this site. See Figure 4 for a map of this site.

Cottonwood Creek Drainage

Annabella Ponds (Ponds north of road by Annabella Reservoir)

Annabella Pond 1
Date: 12 July 2014
Elevation: 2996m
Observers: KKW, ATM, AAW, EWC
This is the easternmost of the Annabella ponds. One boreal toad with a SVL of 97mm was found at this site. One chytrid sample was taken from the toad. Approximately seventy boreal chorus frog (*Pseudacris maculate)* tadpoles were observed in this pond. Two neotenic barred tiger salamanders (*Ambystoma tigrinum)* were also observed. This site was surveyed once previously in 2000. At that time, three boreal toads were observed at this pond, as wells as boreal chorus frogs and juvenile tiger salamanders. See Figure 5 for a map of this site.

Annabella Pond 2
Date: 12 July 2014
Elevation: 2999m
Observers: KKW, ATM, AAW, EWC
No boreal toads were observed at this site. Eleven adult boreal chorus frogs, approximately 60 boreal chorus frog tadpoles, and fifteen larval tiger salamanders were also observed. When this pond was surveyed in 2000, boreal chorus frogs were also observed. See Figure 5 for a map of this site.

Annabella Pond 3
Date: 12 July 2014
Elevation: 2999m
Observers: KKW, ATM, AAW, EWC
No boreal toads were found at this site. Nine boreal chorus frogs and approximately 500 of their tadpoles were observed. Two adult and 120 larval tiger salamanders were also observed. This pond was surveyed once previously in 2000. Due to thick emergent vegetation in the middle section of this pond, this site was broken into two different survey sites in 2000. At that time, only boreal chorus frogs were observed. See Figure 5 for a map of this site.

Annabella Pond 4
Date: 12 July 2014
Elevation: 3002m
Observers: KKW, ATM, AAW, EWC
No boreal toads were found at this pond. Thirty-one adult boreal chorus frogs and three boreal chorus frog tadpoles were observed. One chytrid sample was taken from one of these frogs. One adult garter snake was also observed. This pond was surveyed once previously in 2000. At that time, adult and tadpole boreal chorus frogs and cattle were observed at this pond. See Figure 5 for a map of this site.

Annabella Pond 5
Date: 12 July 2014
Elevation: 3001m
Observers: BAM, PJT, FJV, MLM
No boreal toads were observed at this pond. Approximately twenty boreal chorus frog tadpoles were observed. This is the first time this pond has been surveyed. See Figure 5 for a map of this site.

Annabella Pond 6
Date: 12 July 2014
Elevation: 3003m
Observers: BAM, PJT, FJV, MLM
No boreal toads were observed at this pond. Over twenty boreal chorus frogs and many boreal chorus frog tadpoles were observed at this site. This pond was surveyed once previously in 2000. At that time, one boreal toad was observed, along with juvenile and adult boreal chorus frogs and juvenile tiger salamanders. See Figure 5 for a map of this site.

Annabella Pond 7
Date: 12 July 2014
Elevation: 3002m
Observers: BAM, PJT, FJV, MLM
No boreal toads were observed. Over twenty boreal chorus frogs were observed at this pond. Approximately 6 boreal chorus frog tadpoles were observed. This is the first time this pond has been surveyed. See Figure 5 for a map of this site.

Annabella Pond 8
Date: 12 July 2014
Elevation: 3002m
Observers: BAM, PJT, FJV, MLM
No boreal toads were observed at this pond. Two adults and over fifty tadpoles of the boreal chorus frog were observed. This is the first time this pond has been surveyed. See Figure 5 for a map of this site.

Annabella Pond 9
Date: 12 July 2014
Elevation: 3004m
Observers: BAM, PJT, FJV, MLM
No boreal toads were observed at this site. Nine adult boreal chorus frogs and approximately twelve boreal chorus frog tadpoles were observed. No previous surveys have been performed at this site. See Figure 5 for a map of this site.

Annabella Pond 10
Date: 12 July 2014
Elevation: 3004m
Observers: BAM, PJT, FJV, MLM
No boreal toads were observed at this site. Five boreal chorus frogs and many boreal chorus frog tadpoles were observed. One chytrid sample was taken from one of the boreal chorus frogs. This is the first time this pond was surveyed. See Figure 5 for a map of this site.

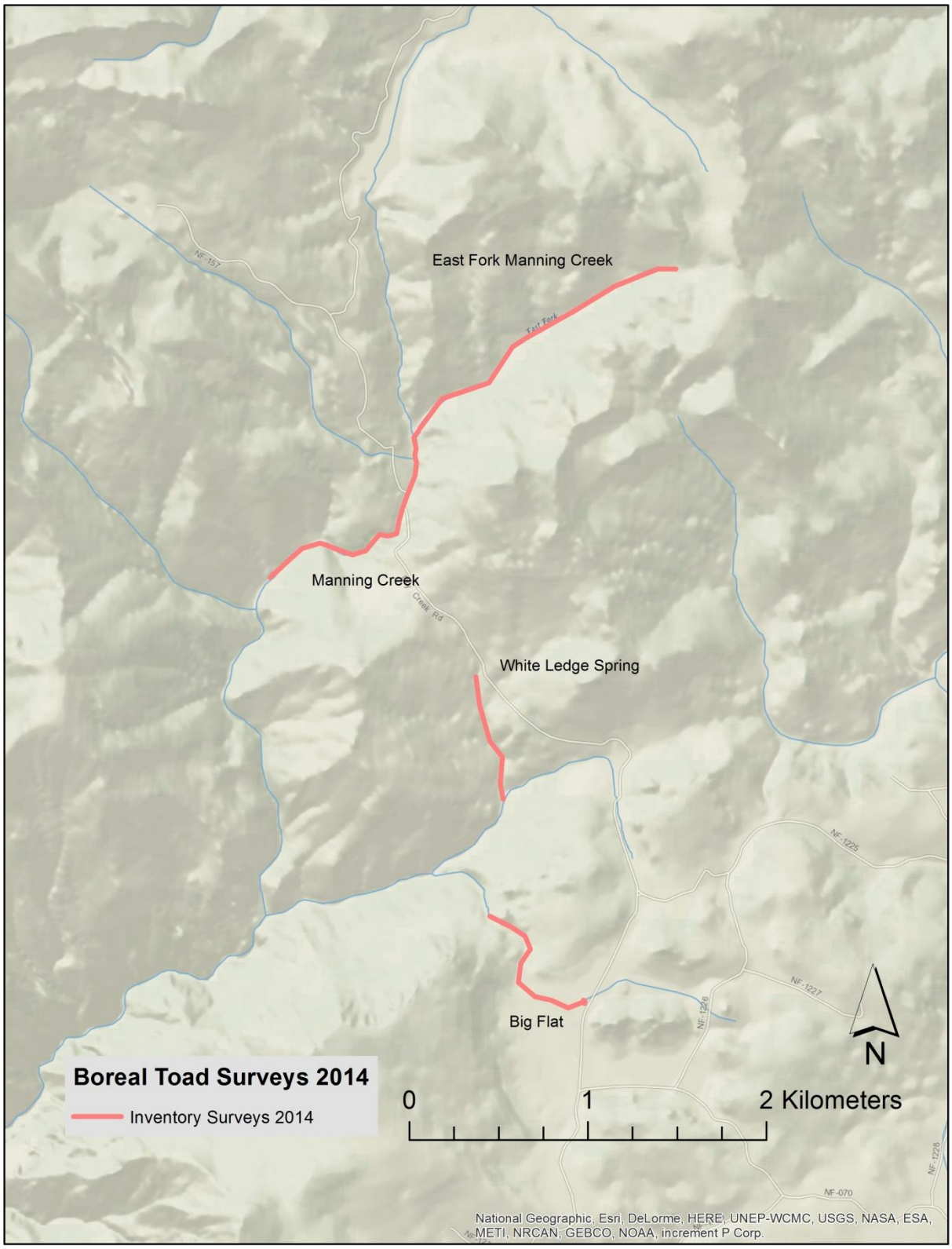

Figure 1. Map of the Manning Creek Drainage. Survey sites in this drainage include White Ledge Spring, East Fork of Manning Creek, Manning Creek, and Big Flat. These sites are highlighted in red.

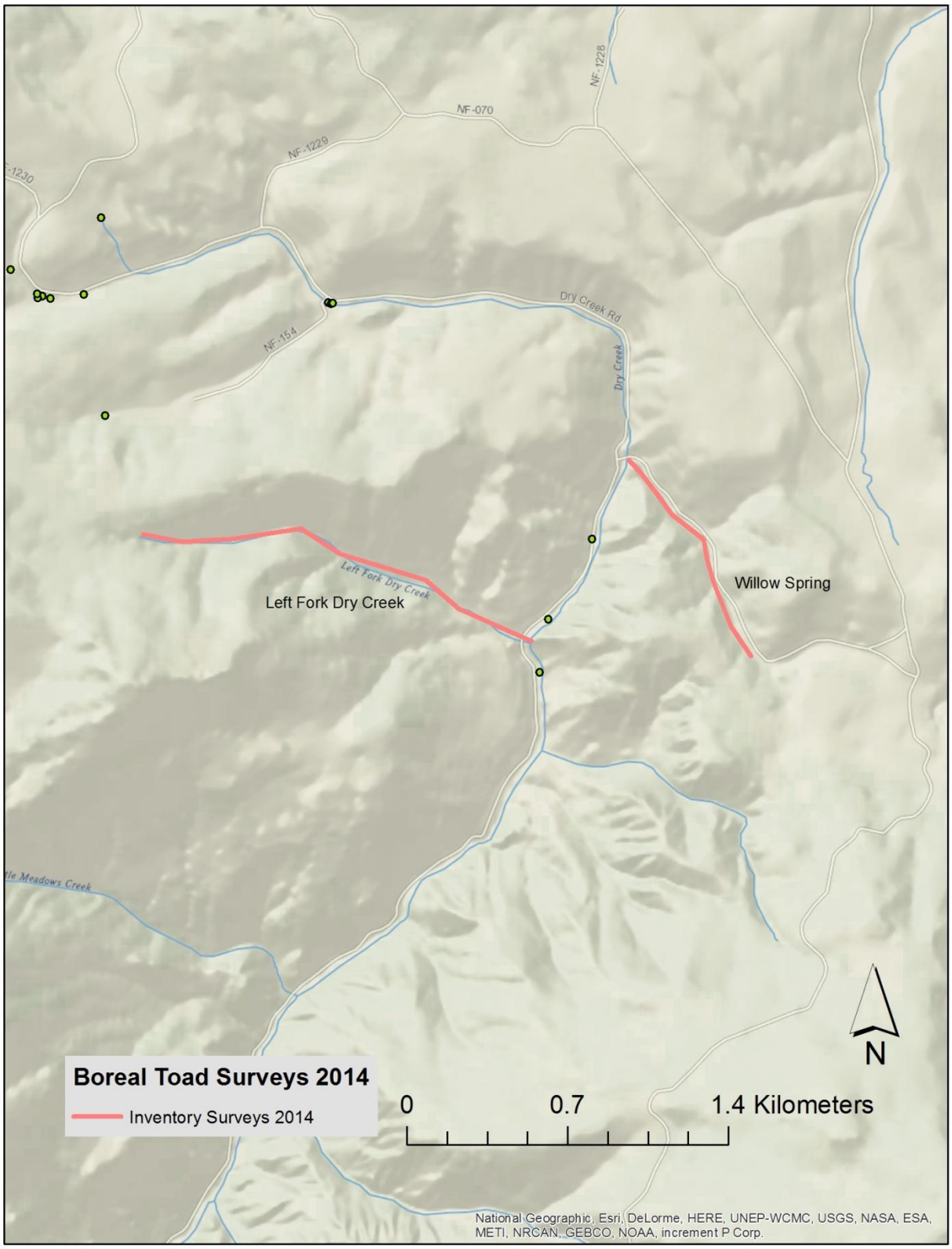

Figure 2. Map of the Dry Creek Drainage. Survey sites in this drainage include Left Fork Dry Creek and Willow Spring. These sites are highlighted in red.

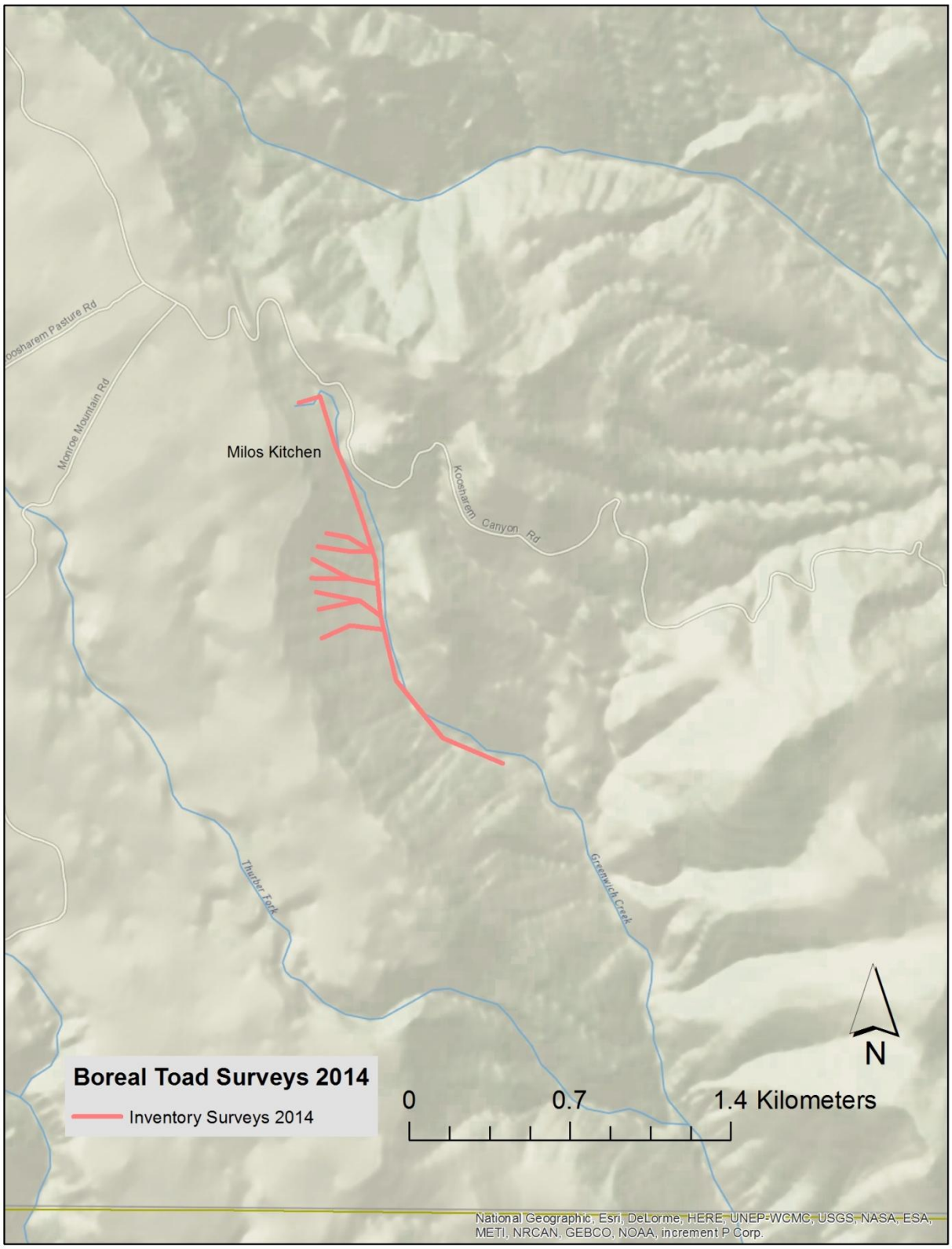

Figure 3. Map of the Koosharem Creek Drainage. This drainage includes Milos Kitchen, which is highlighted in red.

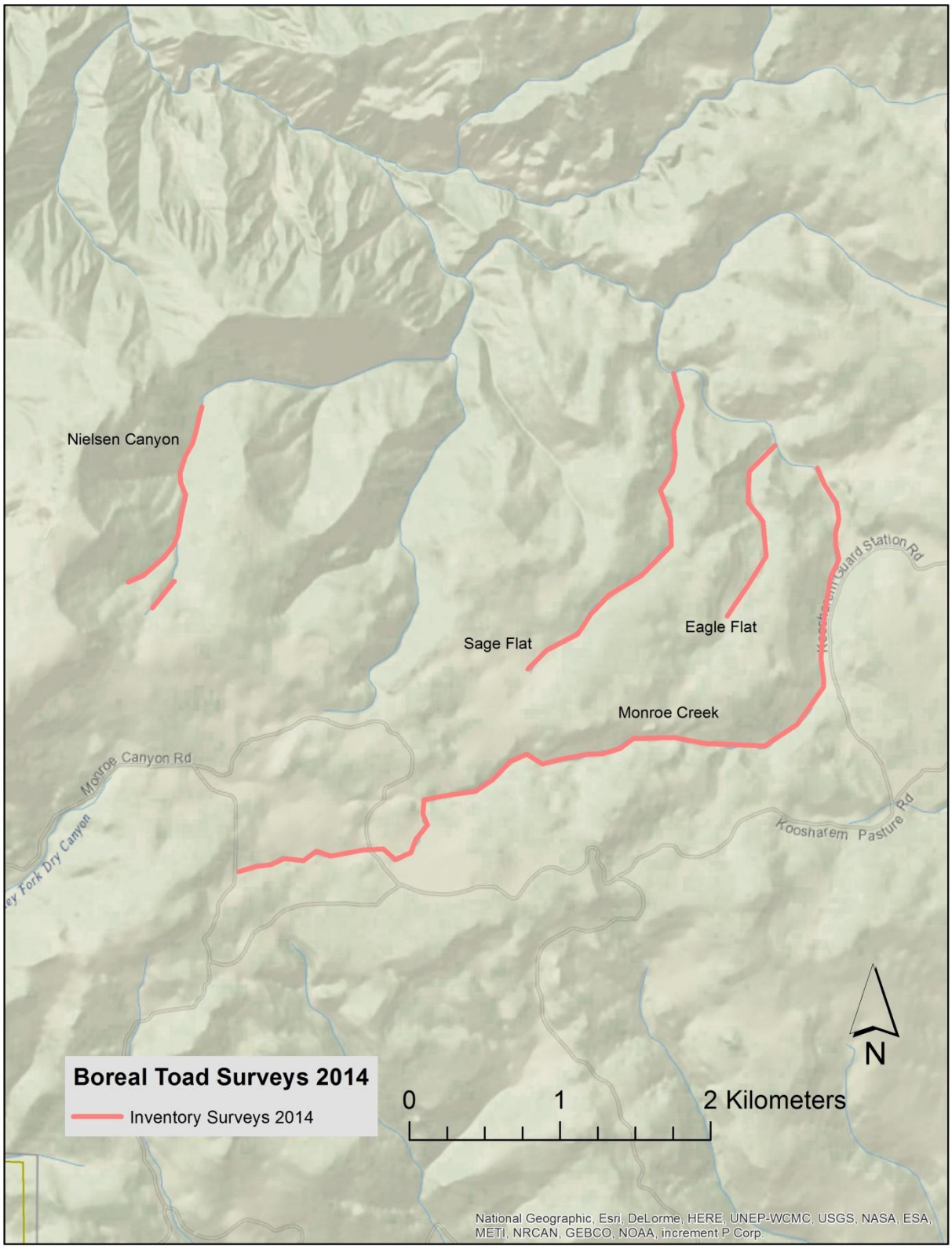

Figure 4. Map on the Monroe Creek Drainage. Survey sites in this drainage include Monroe Creek, Nielsen Canyon, Sage Flat, and Eagle Flat. These surveyed sites are highlighted in red.

Firgure 5. Map of the Annabella ponds 1-10. Each pond is highlighted in blue and labeled with the number corresponding with that pond.

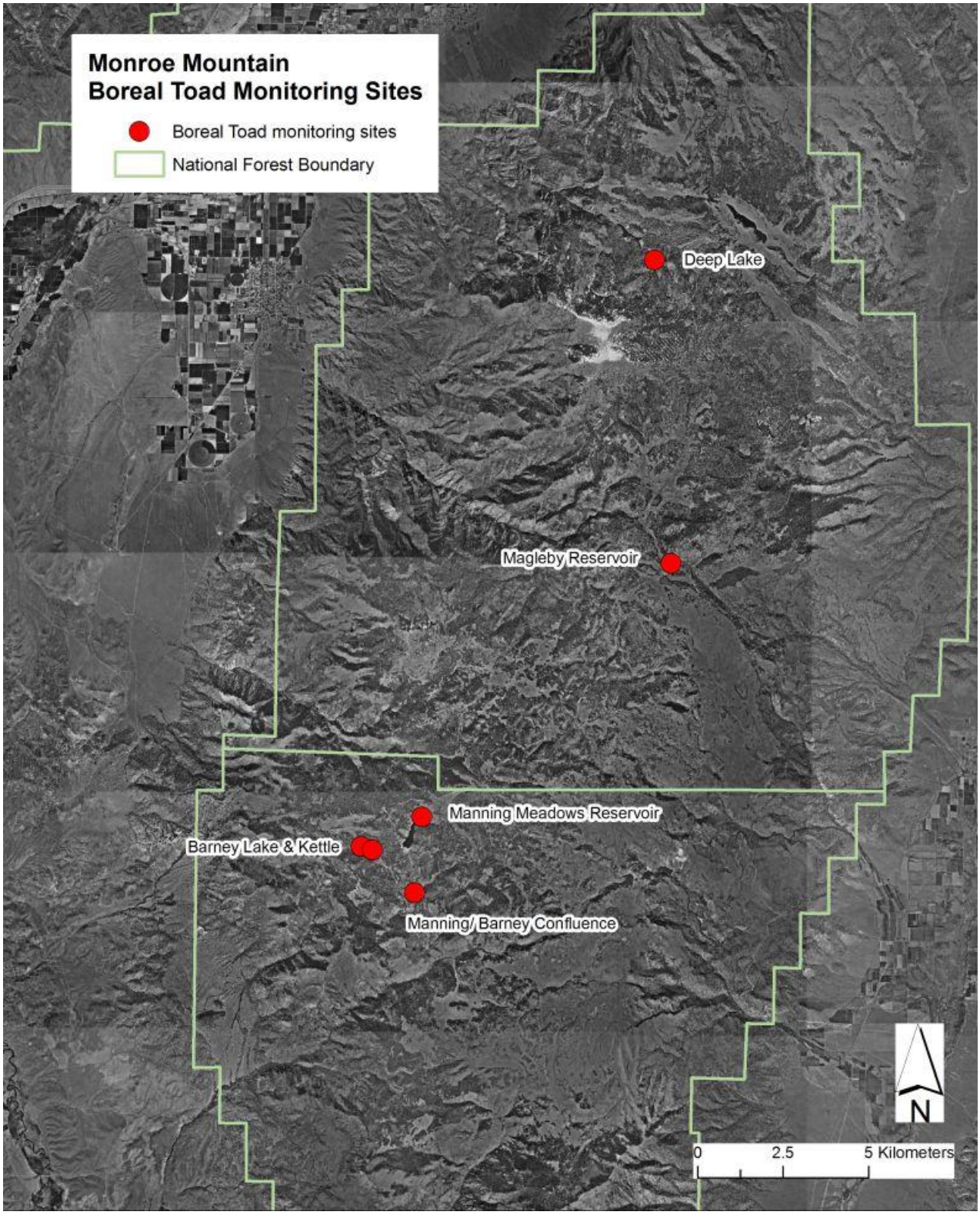

Figure 6. Map of historically surveyed boreal toad breeding sites on Monroe Mountain. During this survey in 2014, Deep Lake, Barney Kettle, and the Manning/Barney Confluence were surveyed.