

Amphibians

Boreal toad population trend data in and near Arapaho Roosevelt National Forests (Boreal Toad Recovery Team 2008).

Column headers in the following tables are defined as follows.

Males/Females/Egg Masses: This column shows the minimum number of breeding age males and females and number of viable egg masses at the locality in each year.

Recruitment: A 'yes' entry means that one-year-old toadlets were observed at the site in the spring of the following year, or two-year-old toads were seen the second year.

Age Classes: The first number in the entry indicates the minimum number of age classes observed/reported at a specific site. Numbers within parentheses indicate which age classes were observed: M=metamorphs (young of the year), 1=one year olds (new 'recruits'), S=subadults (generally two or three year old toads), 2 or 3=subadults which were specifically identified as either two or three year old toads, A=adult toads (generally 4 years old and older).

Boulder County

BO01 – Lost Lake (Middle Boulder Creek) – ARNF

Bd: Negative (2001)

Year	Males/Females /Egg Masses	Recruitment	Age Classes	Comments
1996	0/1/0	No	2(M,A)	Toadlets introduced
1997	0/1/0	No	3(M,1,A)	Toadlets introduced*
1998	0/2/0	No	3(1,2,A)	No breeding observed
1999	0/0/0	No	None	Minimal surveys done
2000	0/0/0	No	None	Adequate monitoring
2001	0/0/0	No	None	Adequate monitoring**
2002	0/0/0	No	None	Adequate monitoring
2003	0/0/0	No	None	3 visits
2004	0/0/0	No	None	2 visits
2005	0/0/0	No	None seen	Site visited 2 times
2006	0/0/0	No	None seen	Site visited once
2007	0/0/0	Unk	None	Site visited once

*Tadpoles observed, possibly from mating of a resident female and a translocated male toad.

**PCR test results were negative for samples from 5 groups of sentinel tadpoles placed at Lost Lake in 2001.

Clear Creek County

CC01 - Vintage (Clear Creek West Fork) – ARNF

Bd: Not tested

Year	Males/Females /Egg Masses	Recruitment	Age Classes	Comments
1994	??/?	Unk	Multiple	Little data available
1995	3/2/2	Unk	2(M,A)	Probably few metamorphs
1996	1/1/1	No	1(A)	No production
1997	1/1/1	No	1(A)	Eggs froze
1998	3/0/0	No	1(A)	No breeding observed
1999	3/0/0	No	1(A)	No breeding observed
2000	0/0/0	No	None seen	Minimal monitoring
2001	0/0/0	No	None seen	No breeding observed*
2002		No		Not monitored
2003	0/0/0	Unk	None Seen	No evidence of breeding
2004		No		Not monitored
2005	0/0/0	No	None seen	No evidence of breeding
2006	0/0/0	No	None seen	Site is drying
2007	0/0/0	Unk	None seen	Site was dry at only visit

*All site visits in 2001, including night surveys, conducted in May.

CC02 – Urad/Henderson (Clear Creek West Fork) – Henderson Mine

Bd: Positive (2004)

Year	Males/Females /Egg Masses	Recruitment	Age Classes	Comments
1995	131/19/19	Yes	4(M,1,S,A)	
1996	142/18/18	Yes	4(M,1,S,A)	Few metamorphs
1997	167/33/23	Yes	4+(M,1,S,A)	
1998	203/107/55	Yes	4(M,1,S,A)	Many metamorphs
1999	141/60/60	Unk	4(M,1,S,A)	Bd mortality
2000	34/34/34	Yes	2(M,A)	
2001	14/14/14	Unk	3(M,1,A)	Some egg mortality*
2002	25/22/22	Unk	2(M,A)	Several sites dry
2003	15/15/15	Yes	1(A)	
2004	10/16/16	Yes	3(M,A,1)	Several sites dried up
2005	2/12/12	Yes	2(M,A)	Poor hatching success
2006	2/1/4	Yes	4(M,1,S,A)	Some water level issues
2007	2/2/0	Unk	3(M,A,1)	

*Egg mass mortality due to a water fungus observed at the hesbo site; other sites had good egg mass survival.

CC03 – Herman Gulch (Clear Creek) – ARNF

Bd: Positive (2004)

Year	Males/Females /Egg Masses	Recruitment	Age Classes	Comments
1993	?/?/?	Unk	2(M,A)	Breeding observed
1994	11/11/11	Unk	2(M,A)	
1995	52/12/12	Unk	3(M,S,A)	Good production
1996	20/12/12	No	1(A)	Poor larvae survival
1997	19/10/10	Unk	3(M,S,A)	Many metamorphs
1998	10/10/10	Unk	2(M,A)	Few metamorphs seen
1999	11/11/11	Yes	1(A)	High egg mortality
2000	9/5/5	Unk	3(1,S,A)	No metamorphs seen
2001	2/2/4	Unk	3(M,S,A)	<50 metamorphs
2002	0/1/0	Unk	1(A)	No evidence of breeding
2003	1/1/1	Yes	1(M)	<50 metamorphs
2004	4/4/4	No	2(1,A)	
2005	0/0/0	No	None seen	
2006	0/0/0	No	None seen	Site visited once
2007	0/0/0	Unk	None seen	Site visited twice

CC04 – Mount Bethel (Clear Creek) – ARNF

Bd: Positive (2005/2006)

Year	Males/Females /Egg Masses	Recruitment	Age Classes	Comments
1993	Yes	Unk	2(M,A)	Many metamorphs
1994	Yes	Unk	2(M,A)	
1995	4/1/1	No	2(S,A)	Few, if any metamorphs
1996	3/3/3	Unk	2(M,A)	Few metamorphs
1997	9/1/1	Unk	2(M,A)	
1998	11/3/3	Unk	2(M,A)	36 + metamorphs seen
1999	23/1/1	Yes	2(M,A)	500 + metamorphs
2000	29/3/3	Yes	4(M,1,S,A)	Many metamorphs seen
2001	28/6/5	Yes	4(M,1,S,A)	500+ metamorphs seen
2002	16/4/4	Yes	3(M,1,A)	Early metamorphosis
2003	7/7/7	Unk	3(M,1,A)	<50 metamorphs
2004	68/8/8	Unk	3(M,S,A)	<50 metamorphs
2005	33/6/6	Unk	2(M,A)	Tested Bd positive
2006	5/0/7	Unk	2(M,A)	Early breeding
2007	1/1/2	Unk	2(M,A)	4 site visits

CC05 – Bakerville (Clear Creek) – ARNF

Bd: Not tested

Year	Males/Females /Egg Masses	Recruitment	Age Classes	Comments
1994	1/1/1	Unk	2(M,A)	Limited data
1995	Unk.	No	Unk	Site not monitored
1996	0/0/0	No	None seen	
1997	Unk.	Unk	Unk	Site not monitored
1998	0/0/0	Unk	None seen	Inadequate monitoring
1999	0/1/0	No	1(A)	Inadequate monitoring
2000	0/0/0	No	None seen	Monitoring adequate
2001	3/0/0	Unk	1(A)	Inadequate monitoring
2002				Site not monitored
2003	1/1/1	No	1(A)	Few tadpoles found
2004	0/0/0	No	None seen	
2005	0/0/0	No	None seen	
2006	0/0/0	No	None seen	Site visited once
2007	0/0/0	Unk	None seen	Visited twice

CC06 – Silverdale (Clear Creek South), ARNF

Bd: Negative (2003)

Year	Males/Females /Egg Masses	Recruitment	Age Classes	Comments
1993	?/?/0	Unk	Multiple	First survey of site
1994	?/?/0	Unk	Multiple	No metamorphs
1995	2/0/0	Unk	2(S,A)	No breeding observed
1996	5/0/0	No	1(A)	No breeding observed
1997	0/0/0	No	None	Inadequate monitoring
1998	1/1/0	Unk	2(S,A)	Monitoring marginal
1999	0/0/0	Yes	1(S)	41 sub-adults seen
2000	0/0/0	Unk	2(1,S)	Many sub-adults seen
2001	0/0/0	Unk	2(S,A)	65 subadults, 7 adults*
2002				Site not monitored
2003				Site not monitored
2004	0/0/0	No	None Seen	
2005	0/0/0	No	1(A)	9 unsexed adults seen
2006	0/0/0	No	None seen	Site visited twice
2007	0/0/0	Unk	None seen	Visited once – poor visibility

*Breeding site used in 1990s apparently not being used at present, and location of current breeding site unknown.

CC07 – Otter Mountain (Clear Creek South), ARNF

Bd: Negative (2003/2006)

Year	Males/Females /Egg Masses	Recruitment	Age Classes	Comments
2003	1/1/1	No		200 tadpoles seen
2004	2/2/2	No	1(A)	50 tadpoles seen
2005	0/0/0	No	1(A)	1 adult seen
2006	2/2/2	No	1(A)	5 adults seen
2007	0/0/0	Unk	None	Sed fences may be barriers

Grand County

GR01 – Jim Creek (Winter Park) – ARNF

Bd: Not tested

Year	Males/Females /Egg Masses	Recruitment	Age Classes	Comments
1995	5/1/?	Unk	3+(S,A)	Substantial population
1996	?/?/0	Unk	3+(S,A)	Substantial population
1997	0/0/0	Unk	None	Monitoring inadequate
1998	0/0/0	Unk	None	Monitoring inadequate
1999	0/0/0	Unk	None	No night survey done
2000	0/0/0	Unk	None	Monitoring adequate
2001	0/0/0	Unk	None	No night survey done
2002	0/0/0	Unk	None	Not monitored
2003	0/0/0	Unk	None	Site visited 7 times*
2004	0/0/0	Unk	None	
2005				Not monitored
2006				Monitoring report not received
2007	0/0/0	Unk	None	Visited twice

*Breeding site constructed just downstream from original breeding area in 2003: this is the site that will be monitored in subsequent years.

GR02 – Pole Creek – (Pole Creek)

Bd: Positive (2002/2003)

Year	Males/Females /Egg Masses	Recruitment	Age Classes	Comments
1995	5/3/3	Unk	2(M,A)	Numerous metamorphs
1996	3/3/3	Yes	2(M,A)	Few metamorphs
1997	10/4/2	No	2(1,A)	Few, if any, metamorphs
1998	5/2/2	Yes*	2(M,A)	Monitoring marginal
1999	5/5/5	Unk	2(M,A)	Metamorphs at #4
2000	6/2/2	Yes	3(M,S,A)	One clutch desiccated
2001	9/7/7	Yes	4(M,1,S,A)	>500 metamorphs
2002	14/6/6	Yes	4(M,1,S,A)	Metamorphs present**
2003	7/2/2	Yes	4(M,1,S,A)	>500 metamorphs
2004	2/2/2	Yes	3(M,S,A)	>150 metamorphs
2005	34/8/8	Yes	4(M,1,S,A)	>3000 metamorphs
2006	5/5/5	Yes	3(M,1,A)	35 adults seen
2007	12/4/0	Unk	3(A,1,S)	16 adults seen

This locality is on Pole Creek Golf Course, near holes 4 and 15

*Recruitment from 1998 production based on observations of sub-adult toads in 2000.

**Metamorphs sampled on 9/23/02 Bd positive

GR03 – Vasquez Creek (Vasquez Creek) – ARNF

Bd: Not tested

Year	Males/Females /Egg Masses	Recruitment	Age Classes	Comments
1999	1/1/1	Yes*	1(A)	Found late in the season
2000	0/0/0	No	None	Monitoring adequate
2001	0/0/0	No	1(S)	1 sub-adult seen*
2002	0/0/0	Unk	None	1 site visit
2003				Site not monitored
2004	0/0/0	No	None	
2005	0/0/0	No	1(A)	1 adult seen
2006	0/0/0	No	None seen	
2007	0/0/0	Unk	None seen	Potential habitat searched throughout drainage

*16 tadlets from 1999 clutch were captive reared and released in Vasquez Creek drainage in 2000; the sub-adult observed in 2001 was observed at the release site. No toads were observed then or since at the 1999 breeding site (tire rut): both sites continue to monitored.

GR04 – McQueary Lake (Upper Williams Fork) – ARNF

Bd: Positive (2003)

Year	Males/Females /Egg Masses	Recruitment	Age Classes	Comments
2001	2/3/3	Yes	2(1,A)	No metamorphs observed
2002	8/6/6	Unk	2(M,A)	<50 metamorphs
2003	2/2/2	No	2(S,A)	Desiccation and predation
2004	0/0/0	No	None	
2005	0/0/0	No	None seen	
2006	0/0/0	No	None seen	Possible adult sighting
2007	0/0/0	Unk	None	Also searched above lake to upper ponds

GR05 – Upper Williams Fork (Upper Williams Fork) – ARNF

Bd: Positive (2006)

Year	Males/Females /Egg Masses	Recruitment	Age Classes	Comments
2001	2/2/2	Yes	3(A,M,1)	Metamorphs observed
2002	1/1/1	Yes	3(A,S,1)	No metamorphs seen
2003	1/2/1	Yes	4(M,1,S,A)	<50 metamorphs
2004	2/2/2	Yes	4(M,1,S,A)	Cold water temps
2005	2/1/1	Unk	2(1,S,A)	Metamorphs possible
2006	2/0/1	Yes	2(M,A)	
2007	2/1/0	Unk	3(M,A,1)	

GR06 – Big Meadow (Big Meadow) – RMNP

Bd: Positive (2004/2005)

Year	Males/Females /Egg Masses	Recruitment	Age Classes	Comments
2004	1/1/0	Yes	3(M,1,A)	
2005	2/2/2	Unk	2(1,A)	
2006	0/0/2	Unk	1(S)	Pond dried
2007	1/1/0	Unk	2(A,S)	

GR07 – South Fork (South Fork Williams Fork) – ARNF

Bd: Unk

Year	Males/Females /Egg Masses	Recruitment	Age Classes	Comments
2007	?/?/?	Unk	?	Found by DOW in Sept- only tadpoles seen

Larimer County

LR01 – Lost Lake (North Fork Big Thompson) – Rocky Mountain NP

Bd: Positive (2000/2005)

Year	Males/Females /Egg Masses	Recruitment	Age Classes	Comments
1990	?/?/22	Unk	1(A)	Incomplete data
1991	206/28/15	Unk	1(A)	No data on subadults
1992	143/23/23	Unk	1(A)	No data on subadults
1993	77/10/?	Unk	1(A)	Incomplete data
1994	110/35/35	Unk	Unk	No data on subadults
1995	122/32/32	Yes*	1(A)	No data on subadults
1996	43/15/152	No	1(A)	No data on subadults
1997	112/15/15+	No	3(M,2*,A)	15-20 egg masses
1998	106/12/12	Unk	2(M,A)	150+ metamorphs seen
1999	10/10/10	Unk	1(A)	Metamorphs possible
2000	3/3/3	Unk	1(A)	Bd positive
2001	0/3/0	Unk	1(A)	Only females observed
2002	0/1/0	Unk	1(A)	One female observed
2003	0/0/0	Unk	None	Surveys adequate
2004	0/0/0	Unk	None seen	Juveniles found along trail
2005	3/3/3	Unk	1(A)	Larvae seen
2006	0/0/0	Unk		Larvae seen
2007	0/2/2	Unk	2(A,S)	No breeding observed

*Recruitment in 1995 based on observation of 2 year old toads in 1997.

LR02 – Kettle Tarn (North Fork Big Thompson) – RMNP

Bd: Positive (2001/2005); Negative (2006)

Year	Males/Females /Egg Masses	Recruitment	Age Classes	Comments
1990	?/?/13	Unk	1(A)	Incomplete data
1991	21+/23/23	Unk	1(A)	No data on subadults
1992	63/18/18	Unk	1(A)	No data on subadults
1993	54/25/25	Unk	2(M,A)	
1994	120/21/21	Unk	2(M,A)	
1995	210/24/24	Unk	2(M,A)	
1996	29/13/8	Unk	3(M,2,A)	
1997	15/11/0	No	1(A)	
1998	18/13/10	Unk	1(A)	
1999	15/8/2	Yes*	1(A)	No metamorphs seen
2000	13/5/3	Unk	2(1,A)	One 1 year old seen*
2001	2/4/3	Yes	3(M,S,A)	Metamorphs observed*
2002	2/2/2	Yes	3(M,1,A)	NASRF tadpoles released**
2003	3/3/3	Yes	3(M,1,A)	500+ metamorphs
2004	2/2/2	Unk	3(1,S,A)	Site dry by late July
2005	0/1/0	Unk	1(A)	Good water levels
2006	0/3/1	Unk	1(A)	Desiccation loss
2007	1/0/0	Unk	1(A)	No breeding observed

*Metamorphs observed but not estimated on monitoring form.

**Tadpoles from NASRF released at site; it is unknown whether metamorphs observed in 2002 derived from naturally produced clutches or from these released tadpoles.

LR03 – Spruce Lake (Big Thompson) – RMNP

Bd: Negative (2003/2005/2006)

Year	Males/Females /Egg Masses	Recruitment	Age Classes	Comments
1996	Unk	Yes	Unk	Reproduction presumed
1997	3/1/?	Unk	3(1,S,A)	Limited monitoring
1998	9/3/1	Unk	1(A)	Inadequate monitoring
1999	9/3/1	Yes	2(S,A)	Inadequate monitoring
2000	10/4/2	Unk	3(M,I,A)	Three 1-year old seen
2001	10/2/2	Unk	2(S,A)	Larvae observed*
2002	15/3/3	Unk	1(A)	No metamorphs observed
2003	12/1/1	Unk	1(A)	No larvae observed
2004	10/2/2	Unk	1(A)	No larvae observed
2005	7/5/5	Unk	1(A)	Larvae observed
2006	7/1/3	Unk	2(M,A)	Eggs collected from site
2007	0/8/2	Unk	1(A)	15 egg masses and 100 tadpoles observed

*Last site visit June 20, prior to time of metamorphosis

LR04 – Glacier Basin (Big Thompson) – RMNP

Bd: Not tested

Year	Males/Females /Egg Masses	Recruitment	Age Classes	Comments
1995	1/1/0	Unk	1(A)	
1996	1/1/1	Yes	1(A)	Translocation site
1997	0/1/0	No	2(1,A)	
1998	3/0/0	Unk	1(A)	No breeding activity seen
1999	3/0/0	Unk	1(A)	No night survey done
2000	0/0/0	Unk	None	Monitoring adequate
2001				Not monitored *

*This site will no longer be regularly monitored after 2000. Translocation appears unsuccessful (Muths et. al. 2001).

LR05 – Twin Lake (South Cache la Poudre) – ARNF

Bd: Positive (2001)

Year	Males/Females /Egg Masses	Recruitment	Age Classes	Comments
1998	1/1/1	Unk	1(A)	Tadpoles observed
1999	0/0/0	Unk	None	Site disturbed/dam work*
2000	0/0/0	Yes	None	Low water
2001	3/2/2	Yes	3(1,S,A)	No metamorphs seen
2002	1/1/1	Unk	2(S,A)	No metamorphs seen
2003	0/0/0	Unk	0	Site disturbed
2004				Not monitored
2005				Not monitored
2006				Not monitored
2007				Not monitored

*In 1999 there was temporary disturbance at this site due to testing of reconstructed dam.

LR06 – Trout Creek (Trout Creek) – ARNF

Bd: Negative (2004/2006)

Year	Males/Females /Egg Masses	Recruitment	Age Classes	Comments
2004	2/2/2	Yes	1(A)	Site found 6/22/04
2005	0/0/0	Yes	None seen	
2006	0/0/3	Unk	3(1,S,M)	Good year at site
2007				Monitoring data not yet received

LR07 – Panhandle Creek (Panhandle Creek) – ARNF

Bd: Negative (2006)

Year	Males/Females /Egg Masses	Recruitment	Age Classes	Comments
2004	3/2/0	Yes	2(S,A)	Exact site not found
2005	0/0/0	Yes	None seen	
2006	5/0/1	Unk	4(M,1,S,A)	Exact site located
2007				Monitoring data not yet received

LR08 – Faye Lakes (Faye Lakes) – RMNP

Bd: Negative (2005/2006)

Year	Males/Females /Egg Masses	Recruitment	Age Classes	Comments
2004	4/4/0	Yes	2(M,A)	
2005	2/2/2	Yes	2(1,A)	
2006	3/2/0	Yes	3(M,1,A)	
2007	6/2/2	Unk	3(A,1,S)	

As of 2007 there are 23 breeding sites on the Planning Area (see following table). Although not part of the historic database, discovery of ‘new’ breeding areas is probably just the first confirmation of boreal toad presence in areas not previously surveyed for boreal toads, but where they have been present for years. Of all 23 sites, 9 are Bd positive, 5 are Bd negative, and 9 have not yet been tested.

# Sites	Boulder County	Clear Creek County	Grand County	Larimer County
ARNF	1	6	5	3
RMNP	0	0	1	5
Private	0	1	1	0
Bd+	0	3 (2 neg: 2 unk.)	4 (3 unk.)	2 (5 neg:1 unk.)

Despite the discovery of new sites (previously undetected sites) on the Planning Area, predominantly in Larimer County, and several others statewide, CNHP and other data clearly indicates a downward trend for boreal toad numbers at occupied sites in Colorado and on the Planning Area.