

APPENDIX A – MIS Population Trend Tables

Mammals

Table 1.

Elk Post-hunt population estimates (Big game statistics, Colorado Division of Wildlife, 2006)

| Herd Name | Data Analysis Unit | Game Mgmt Units In and near ARNF | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 |
|--------------------------------|--------------------|----------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Poudre River | E4 | 7,8,9,19,191 | 4490 | 4390 | 4540 | 4240 | 4280 | 4210 | 3920 | 3890 | 3810 | 3700 |
| Saint Vrain | E9 | 20 | 2670 | 2570 | 4140 | 4220 | 4370 | 3980 | 3810 | 4020 | 4100 | 3072 |
| Clear Creek | E38 | 29,38 | 1240 | 1230 | 1280 | 1250 | 1290 | 1300 | 1180 | 1150 | 1190 | 1211 |
| Mount Evans | E39 | 39,46,391,461 | 2460 | 2620 | 3000 | 3170 | 3140 | 3220 | 3020 | 4090 | 3850 | 4200 |
| Troublesome Cr | E8 | 18,181 | 3640 | 4700 | 3560 | 3340 | 3590 | 4020 | 3590 | 3820 | 3030 | 2862 |
| William's Fork | E13 | 28,37,371 | 4770 | 5200 | 4160 | 3880 | 3490 | 3340 | 4200 | 3800 | 3300 | 3778 |
| In and near ARNF Totals | | | 19270 | 20710 | 20680 | 20100 | 20160 | 20070 | 19720 | 20770 | 19280 | 18823 |
| State-wide Totals | | (rounded to 100) | 218500 | 229400 | 264600 | 292600 | 305500 | 297500 | 278700 | 274900 | 258400 | 271800 |

-- ARNF population trend has been stable 1997-2006.

-- Colorado population estimates have increased 40% from 1997-2001, and have been gradually decreasing since; 2006 saw a slight increase.

Table 2.

Mule deer

Post-hunt population estimates (Big game statistics, Colorado Division of Wildlife, 2006)

| Herd Name | Data Analysis Unit | Game Mgmt Units In and near ARNF | Post-hunt population estimates (Big game statistics, Colorado Division of Wildlife, 2006) | | | | | | | | | |
|------------------------------------|--------------------|----------------------------------|---|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| | | | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 |
| Redfeather | D4 | 7,8,9,19,191 | 12290 | 13810 | 11190 | 9730 | 9720 | 9070 | 8340 | 8650 | 8140 | 7300 |
| Big Thompson | D10 | 20 | 7960 | 8240 | 5830 | 6320 | 6470 | 6120 | 6470 | 6430 | 5880 | 5410 |
| Boulder | D27 | 29,38 | 7220 | 7400 | 8550 | 7890 | 7270 | 7080 | 7470 | 7000 | 7130 | 7366 |
| Bailey | D17 | 39,46,51, 391,461 | 8330 | 6890 | 6750 | 7070 | 7570 | 8410 | 8420 | 8010 | 7880 | 7800 |
| Middle Park | D9 | 18,181,27,28,37,371 | 10150 | 11960 | 14180 | 10900 | 12250 | 13150 | 13240 | 13250 | 12030 | 9418 |
| In and near ARNF Totals | | | 45950 | 48300 | 46500 | 41910 | 43280 | 43830 | 43940 | 43340 | 41060 | 37294 |
| In and near PNG Totals | | | | | | | | | | | | |
| Table Lands | D5 | 87,88,89,90,93,95 | 1/ | 1/ | 1/ | 2110 | 1880 | 1600 | 1480 | 1450 | 1500 | 1850 |
| In and near ARNF/PNG Totals | | | | | | 44020 | 45160 | 45430 | 45420 | 44790 | 42560 | 39144 |
| State-wide Totals (rounded to 100) | | | 516500 | 526400 | 528700 | 551600 | 565300 | 563700 | 602700 | 593,610 | 614100 | 612760 |

1/ Not comparable at present scale. Prior to 2000, Table Lands data analysis unit included a larger area beyond PNG.

- ARNF trend has varied since 1997, with population being highest in 1998 and lowest in 2006.
- PNG trend has declined yearly, dropping 29% since 2000.
- Combined ARNF/PNG trend has been generally stable since 2000, with population being lowest in 2006.
- For Colorado, population trend was generally upward 1997-2005, increasing 19% overall. 2006 indicates a slight decrease.

Table 3.

Bighorn sheep Post-hunt population estimates (Big game statistics, Colorado Division of Wildlife, 2006)

| Herd Name | Game Mgmt Units In and near ARNF | Post-hunt population estimates (Big game statistics, Colorado Division of Wildlife, 2006) | | | | | | | | | |
|------------------------------------|-------------------------------------|---|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| | | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 |
| Poudre River | S1 | 150 | 120 | 120 | 120 | 115 | 105 | 95 | 95 | 50 | 55 |
| Mount Evans | S3 | 240 | 200 | 200 | 200 | 200 | 160 | 125 | 125 | 175 | 100 |
| Rawah | S18 | ** | 40 | 40 | 40 | 30 | 30 | 45 | 45 | 20 | 15 |
| Never Summer Range | S19 | 175 | 100 | 100 | 50 | 50 | 50 | 50 | 25 | 25 | 25 |
| Georgetown | S32 | 350 | 350 | 450 | 450 | 450 | 400 | 250 | 300 | 300 | 400 |
| St Vrain | S37 | *** | 80 | 80 | 80 | 80 | 100 | 100 | 100 | 100 | 100 |
| Big Thompson | S57 | 140 | 60 | 50 | 50 | 60 | 80 | 80 | 80 | 80 | 80 |
| Lower Poudre | S58 | 60 | 40 | 40 | 40 | 30 | 30 | 30 | 30 | 25 | 25 |
| Rocky Mtn National Park | N/A | 130 | 130 | 400 | 350 | 350 | 350 | 450 | 450 | 375 | 375 |
| In and near ARNF Totals | | 1245 | 1120 | 1480 | 1380 | 1365 | 1305 | 1225 | 1250 | 1150 | 1175 |
| State-wide Totals | | 7720 | 7245 | 7455 | 7535 | 7590 | 7495 | 7465 | 7370 | 7260 | 7330 |

** Lumped with S1.

*** Lumped with S57

-- ARNF and Colorado trends have both varied and decreased slightly from 1997 to 2006.

Table 4.

Black-tailed Prairie Dog (Active towns; PNG annual surveys)

| In and near PNG | | | | | |
|------------------------|-------|------------|-------------|-------|-------------|
| Year | Towns | Acres | Year | Towns | Acres |
| 1981 | 14 | 357 | 1994 | 21 | 329 |
| 1982 | 15 | 360 | 1995 | 17 | 338 |
| 1983 | 14 | 179 | 1996 | 19 | 515 |
| 1984 | 13 | 249 | 1997 | 21 | 701 |
| 1985 | 14 | 323 | 1998 | 20 | 892 |
| 1986 | 17 | 282 | 1999 | 19 | 703 |
| 1987 | 15 | 384 | 2000 | 25 | 934 |
| 1988 | 16 | 331 | 2001 | 26 | 1032 |
| 1989 | 13 | 602 | 2002 | 30 | 1674 |
| 1990 | 20 | 419 | 2003 | 29 | 2053 |
| 1991 | 23 | 566 | 2004 | 27 | 2863 |
| 1992 | 17 | 322 | 2005 | 42 | 3673 |
| 1993 | 28 | 387 | 2006 | 48 | 2840 |

Three plague events occurred after the towns were surveyed in 2005, resulting in a loss of about 1/3 or a year-end total of about 2460 acres.

Number and size of prairie dog towns best indicate population levels (Colorado Division of Wildlife 2003, Severson and Plumb 1998, Cinotta et al. 1987, Garrett et al. 1982).

Since 1981 acres of towns have varied between 179 acres in 1983 and 3763 acres in 2005 with reductions primarily caused by plague.

Since 1994 annual increases have occurred, except for one year.

Birds

Table 5.

Burrowing Owl (PNG annual owl surveys)

| In and near PNG Year | # Dog Towns Surveyed | Total # Acres | Adult Owls | Juvenile Owls | Unknown Owls | Total # Owls |
|-------------------------------------|-------------------------------------|--------------------------|-----------------------|--------------------------|-------------------------|-------------------------|
| 1998 | 23 | 585 | 40 | 90 | 47 | 177 |
| 1999 | 26 | 1070 | 43 | 56 | 23 | 122 |
| 2000 | 28 | 987 | 48 | 58 | 32 | 138 |
| 2001 | 30 | 1216 | 68 | 43 | 32 | 143 |
| 2002 | 32 | 18790 | 83 | 57 | 45 | 185 |
| 2003 | 31 | 2295 | 67 | 79 | 71 | 217 |
| 2004 | 33 | 3411 | 70 | 133 | 69 | 270 |
| 2005 | 51 | 4202 | 85 | 128 | 91 | 304 |
| 2006 | 59 | 2840 | 166 | 352 | 78 | 596 |

Population trends have continued to increase on the PNG since 1999, with 2006 numbers approximately 3.3 times higher than in 1998.

Table 6.

Mountain Plover (USGS annual surveys - Knopf 2004, Wunder 2005)

| PNG | | | | | | | | |
|-------------|-----------|--------------------------------|-------------|-----------|--------------------------------|-------------|----------|--------------------------------|
| Year | # Birds | Birds/ km ² ± SE | Year | # Birds | Birds/ km ² ± SE | Year | # Birds | Birds/ km ² ± SE |
| 1990 | 77 | 4.7 ± 1.2 | 1998 | 24 | 1.5 ± 0.1 | 2006 | 2 | NA |
| 1991 | 33 | 2.0 ± 0.5 | 1999 | 0 | NA | | | |
| 1992 | 67 | 4.1 ± 0.8 | 2000 | 8 | NA | | | |
| 1993 | 44 | 2.7 ± 0.6 | 2001 | 2 | NA | | | |
| 1994 | 59 | 3.6 ± 0.4 | 2002 | 1 | NA | | | |
| 1995 | 2 | NA | 2003 | 1 | NA | | | |
| 1996 | 9 | 0.6 ± 0.1 | 2004 | 0 | NA | | | |
| 1997 | 5 | NA | 2005 | 12 | NA | | | |

Dramatic drop in population beginning in 1995 on PNG. 2005 saw an increase but numbers decreased again in 2006.

Counts at larger geographic scales unable to discern trends (RMBO 2002).

Table 7a. (Also see ferruginous hawk transect counts by RMBO)

Ferruginous Hawk (Active nests; PNG annual raptor surveys)

| PNG Year | total # | # active | Year | total # | # active |
|-------------|-------------------|----------|------|-------------------|----------|
| | sites surveyed | nests | | sites surveyed | nests |
| 1981 | 45 | 13 | 1995 | 73 | 7 |
| 1982 | 42 | 14 | 1996 | 78 | 7 |
| 1983 | 53 | 10 | 1997 | 76 | 8 |
| 1984 | 54 | 11 | 1998 | 76 | 11 |
| 1985 | 54 | 4 | 1999 | 75 | 6 |
| 1986 | 56 | 12 | 2000 | 78 | 11 |
| 1987 | 56 | 11 | 2001 | 76 | 5 |
| 1988 | 70 | 14 | 2002 | 80 | 8 |
| 1989 | 70 | 10 | 2003 | 81 | 3 |
| 1990 | 68 | 12 | 2004 | 81 | 4 |
| 1991 | 72 | 15 | 2005 | 81 | 5 |
| 1992 | 80 | 9 | 2006 | 81 | 8 |
| 1993 | 73 | 13 | | | |
| 1994 | 73 | 9 | | | |

Overall trend is downward with an average of 6.9 active nests in the period from 2006 to 1996, down from 11.2 from 1995-1986 and 10.4 from 1981-1985.

Table 7b.

(Also see ferruginous hawk active nest counts by PNG)

**Ferruginous Hawk
PNG**

(Monitoring Colorado Birds data, RMBO 2007)
Number/transect/year

| Transect | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | Avg/yr* |
|-------------------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|------|------------|
| AS28 | 0 | NR | 0 | NR | NR | NR | 0 | 0 | NR | NR | 0.0 |
| AT02 | NR | NR | NR | NR | 0 | 0 | 0 | NR | NR | NR | 0.0 |
| AT03 | NR | 0 | NR | 0 | 0 | 0 | NR | 0 | NR | NR | 0.0 |
| AT04 | NR | 0 | NR | NR | 0 | 0 | 0 | 0 | NR | NR | 0.0 |
| AT05 | NR | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NR | NR | 0.0 |
| AT06 | NR | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NR | NR | 0.0 |
| GR01 | NR | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NR | 0 | 0.0 |
| GR02 | NR | 0 | 1 | 0 | 2 | 0 | 0 | 0 | NR | 0 | 0.4 |
| GR03 | NR | 1 | NR | 0 | 1 | 1 | 0 | 1 | NR | 0 | 0.7 |
| GR05-02 | NR | NR | NR | NR | 0 | NR | NR | 0 | NR | 2 | 0.3 |
| GR15 | NR | NR | 0 | NR | 0 | 0 | 0 | 0 | NR | 0 | 0.0 |
| HR05 | NR | NR | 0 | 0 | NR | 0 | 0 | 0 | NR | NR | 0.0 |
| HR09 | NR | 0 | 0 | 0 | 0 | NR | 0 | 0 | NR | NR | 0.0 |
| HR10 | NR | NR | 0 | 0 | 0 | NR | 0 | NR | NR | NR | 0.0 |
| HR18 | NR | 0 | NR | NR | 0 | 0 | 0 | 0 | NR | NR | 0.0 |
| HR25 | NR | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NR | NR | 0.0 |
| MC03 | NR | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NR | NR | 0.0 |
| MC27 | NR | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NR | NR | 0.0 |
| PP13 | 0 | 0 | 0 | 0 | 0 | NR | NR | 0 | NR | NR | 0.0 |
| PP15 | 0 | 0 | NR | 0 | 0 | NR | 0 | 0 | NR | NR | 0.0 |
| PP16 | 0 | 0 | 0 | 0 | 0 | NR | 0 | 0 | NR | NR | 0.0 |
| PP21 | 0 | 0 | 0 | 0 | 0 | NR | 0 | 0 | NR | NR | 0.0 |
| PP29 | 0 | 0 | 0 | NR | 0 | NR | NR | NR | NR | NR | 0.0 |
| SF16 | 0 | NR | 0 | 0 | NR | NR | 0 | NR | NR | NR | 0.0 |
| SF17 | 0 | 0 | NR | 0 | 0 | NR | 0 | 0 | NR | NR | 0.0 |
| SF30 | NR | 0 | 0 | NR | NR | NR | 0 | 0 | NR | NR | 0.0 |
| Total birds | 0 | 1 | 1 | 0 | 3 | 1 | 0 | 1 | 0 | | 0.9 |
| # of transects w/ hits | 0 | 1 | 1 | 0 | 2 | 1 | 0 | 1 | 0 | | 0.8 |

NR = Transect not conducted in this year

* Avg/yr is calculated without NR years

NOTE: In 2003, protocol changed for conducting HR transects from a 15-point point transect (3500m in length) to a 1000m line transect.

- Apparent long-term decline of nesting birds on PNG and relatively stable transect bird counts.
- Increasing breeding bird trends at larger geographic scales (RMBO 2002).
- Increasing winter bird trends at larger geographic scales (RMBO 2002).

Table 8.

Golden-crowned**Kinglet**

(Monitoring Colorado Birds data, RMBO 2007)

ARNF

Number/transect/year

| Transect | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | Avg/yr* |
|-------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|----------------|
| AS28 | 0 | NR | 0 | NR | NR | NR | 0 | 0 | NR | 0.0 |
| AT02 | NR | NR | NR | NR | 0 | 0 | 0 | NR | NR | 0.0 |
| AT03 | NR | 0 | NR | 0 | 0 | 0 | NR | 0 | NR | 0.0 |
| AT04 | NR | 0 | NR | NR | 0 | 0 | 0 | 0 | NR | 0.0 |
| AT05 | NR | 1 | 0 | 0 | 0 | 0 | 0 | 0 | NR | 0.1 |
| AT06 | NR | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NR | 0.0 |
| GR01 | NR | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NR | 0.0 |
| GR02 | NR | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NR | 0.0 |
| GR03 | NR | 0 | NR | 0 | 0 | 0 | 0 | 0 | NR | 0.0 |
| GR05-02 | NR | NR | NR | NR | 0 | NR | NR | 0 | NR | 0.0 |
| GR15 | NR | NR | 0 | NR | 0 | 0 | 0 | 0 | NR | 0.0 |
| HR05 | NR | NR | 17 | 0 | NR | 0 | 0 | 0 | NR | 3.4 |
| HR09 | NR | 4 | 0 | 0 | 0 | NR | 0 | 0 | NR | 0.7 |
| HR10 | NR | NR | 0 | 0 | 0 | NR | 0 | NR | NR | 0.0 |
| HR18 | NR | 0 | NR | NR | 0 | 0 | 0 | 1 | NR | 0.2 |
| HR25 | NR | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NR | 0.0 |
| MC03 | NR | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NR | 0.0 |
| MC27 | NR | 1 | 0 | 0 | 0 | 0 | 0 | 0 | NR | 0.1 |
| PP13 | 0 | 0 | 0 | 0 | 0 | NR | NR | 0 | NR | 0.0 |
| PP15 | 0 | 0 | NR | 0 | 0 | NR | 0 | 0 | NR | 0.0 |
| PP16 | 0 | 0 | 0 | 0 | 0 | NR | 0 | 0 | NR | 0.0 |
| PP21 | 0 | 0 | 0 | 0 | 0 | NR | 0 | 0 | NR | 0.0 |
| PP29 | 0 | 0 | 0 | 0 | 0 | NR | NR | NR | NR | 0.0 |
| SF04 | NR | NR | NR | NR | NR | NR | NR | NR | 10 | 10.0 |
| SF15 | NR | NR | NR | NR | NR | NR | NR | NR | 1 | 1.0 |
| SF16 | 0 | NR | 0 | NR | NR | NR | 0 | NR | 1 | 0.3 |
| SF17 | 10 | 2 | NR | 0 | 1 | NR | 0 | 2 | 1 | 2.3 |
| SF30 | NR | 2 | 4 | NR | NR | NR | 1 | 5 | NR | 3.0 |
| Total birds | 10 | 10 | 21 | 0 | 1 | 0 | 1 | 8 | 13 | 7.0 |
| # of transects w/ hits | 1 | 5 | 2 | 0 | 1 | 0 | 1 | 3 | 4 | 2.0 |

NR = Transect not conducted in this year

* Avg/yr is calculated without NR years

- Overall trend on the forest decreased beginning in 2001 and continuing through 2004 with an increase in 2005 and 2006. All transects with historic hits of GCKI were read in 2005.
- Breeding trends since 1979 and winter trends since 1988 are not available at larger geographic scales (RMBO 2002).

Table 9.

Hairy Woodpecker (Monitoring Colorado Birds data, RMBO 2006)

| ARNF | Number/transect/year | | | | | | | | | |
|-------------------------------|----------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|----------------|
| Transect | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | Avg/yr* |
| AS28 | 2 | NR | 1 | NR | NR | NR | 1 | 2 | NR | 2.0 |
| AT02 | NR | NR | NR | NR | 1 | 0 | 0 | NR | NR | 0.3 |
| AT03 | NR | 0 | NR | 0 | 0 | 0 | NR | 0 | NR | 0.0 |
| AT04 | NR | 0 | NR | NR | 0 | 0 | 0 | 0 | NR | 0.0 |
| AT05 | NR | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NR | 0.0 |
| AT06 | NR | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NR | 0.0 |
| GR01 | NR | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NR | 0.0 |
| GR02 | NR | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NR | 0.0 |
| GR03 | NR | 0 | NR | 0 | 0 | 0 | 0 | 0 | NR | 0.0 |
| GR05-02 | NR | NR | NR | NR | 0 | NR | NR | 0 | NR | 0.0 |
| GR15 | NR | NR | 0 | NR | 0 | 0 | 0 | 0 | NR | 0.0 |
| HR01 | NR | NR | NR | NR | NR | NR | NR | NR | 1 | 1.0 |
| HR05 | NR | NR | 0 | 0 | NR | 0 | 0 | 0 | 2 | 0.3 |
| HR09 | NR | 0 | 0 | 0 | 0 | NR | 1 | 0 | NR | 0.2 |
| HR10 | NR | NR | 2 | 3 | 0 | NR | 0 | NR | 1 | 1.2 |
| HR18 | NR | 0 | NR | NR | 0 | 0 | 0 | 0 | NR | 0.0 |
| HR25 | NR | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NR | 0.0 |
| MC03 | NR | 1 | 0 | 0 | 1 | 0 | 1 | 0 | NR | 0.4 |
| MC27 | NR | 0 | 0 | 0 | 0 | 0 | 1 | 0 | NR | 0.1 |
| NO01-05 | NR | NR | NR | NR | NR | NR | NR | NR | 2 | 2.0 |
| PP13 | 6 | 2 | 2 | 0 | 0 | NR | NR | 0 | 1 | 2.0 |
| PP15 | 0 | 0 | NR | 0 | 0 | NR | 0 | 1 | 1 | 0.3 |
| PP16 | 4 | 0 | 1 | 0 | 4 | NR | 2 | 13 | NR | 3.4 |
| PP21 | 3 | 1 | 0 | 4 | 1 | NR | 5 | 2 | 4 | 2.5 |
| PP29 | 0 | 1 | 1 | NR | 0 | NR | NR | NR | NR | 0.5 |
| SF01-13 | NR | NR | NR | NR | NR | NR | NR | NR | 2 | 2.0 |
| SF04 | NR | NR | NR | NR | NR | NR | NR | NR | 1 | 1.0 |
| SF16 | 0 | NR | 0 | 0 | NR | NR | 0 | NR | 1 | 0.2 |
| SF17 | 0 | 0 | NR | 0 | 0 | NR | 0 | 1 | 1 | 0.3 |
| SF30 | NR | 2 | 0 | NR | NR | NR | 2 | 0 | NR | 1.0 |
| Total birds | 15 | 7 | 7 | 7 | 7 | 0 | 13 | 19 | 17 | 10.2 |
| # of transects w/ hits | 4 | 5 | 5 | 2 | 3 | 0 | 7 | 5 | 10 | 5.1 |

NR = Transect not conducted in this year

* Avg/yr is calculated without NR years

- Population numbers dipped from 1999 through 2003 for ARNF, but numbers have rebounded to their 1998 levels in 2004 -2006.
- Breeding surveys show increasing trend at a continental level (RMBO 2002).

Table 10.

| | | (Monitoring Colorado Birds data, RMBO 2006) | | | | | | | |
|-----------------------------------|----------------------|---|-------------|-------------|-------------|-------------|-------------|-------------|----------------|
| Lark Bunting | | | | | | | | | |
| ARNF | Number/transect/year | | | | | | | | |
| Transect | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | Avg/yr* |
| AS28 | NR | 0 | NR | NR | NR | 0 | 0 | NR | 0.0 |
| AT02 | NR | NR | NR | 0 | 0 | 0 | NR | NR | 0.0 |
| AT03 | 0 | NR | 0 | 0 | 0 | NR | 0 | NR | 0.0 |
| AT04 | 0 | NR | NR | 0 | 0 | 0 | 0 | NR | 0.0 |
| AT05 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NR | 0.0 |
| AT06 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NR | 0.0 |
| GR01 | 75 | 85 | 68 | 66 | 112 | 77 | 75 | NR | 79.7 |
| GR02 | 52 | 94 | 50 | 44 | 87 | 35 | 44 | NR | 58.0 |
| GR03 | 43 | NR | 76 | 5 | 90 | 72 | 36 | NR | 53.7 |
| GR05-02 | NR | NR | NR | 6 | NR | NR | 87 | NR | 46.5 |
| GR15 | NR | 0 | NR | 0 | 0 | 0 | 64 | NR | 12.8 |
| HR05 | NR | 0 | 0 | NR | 0 | 0 | 0 | NR | 0.0 |
| HR09 | 0 | 0 | 0 | 0 | NR | 0 | 0 | NR | 0.0 |
| HR10 | NR | 0 | 0 | 0 | NR | 0 | NR | NR | 0.0 |
| HR18 | 0 | NR | NR | 0 | 0 | 0 | 0 | NR | 0.0 |
| HR25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NR | 0.0 |
| MC03 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NR | 0.0 |
| MC27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NR | 0.0 |
| PP13 | 0 | 0 | 0 | 0 | NR | NR | 0 | NR | 0.0 |
| PP15 | 0 | NR | 0 | 0 | NR | 0 | 0 | NR | 0.0 |
| PP16 | 0 | 0 | 0 | 0 | NR | 0 | 0 | NR | 0.0 |
| PP21 | 0 | 0 | 0 | 0 | NR | 0 | 0 | NR | 0.0 |
| PP29 | 0 | 0 | NR | 0 | NR | NR | NR | NR | 0.0 |
| SF16 | NR | 0 | 0 | NR | NR | 0 | NR | NR | 0.0 |
| SF17 | 0 | NR | 0 | 0 | NR | 0 | 1 | NR | 0.2 |
| SF30 | 0 | 0 | NR | NR | NR | 0 | 0 | NR | 0.0 |
| Total birds | 170 | 179 | 194 | 121 | 289 | 184 | 307 | 0 | 206 |
| # of transects w/ hits | 3 | 2 | 3 | 4 | 3 | 3 | 6 | 0 | 3.0 |

NR = Transect not conducted in this year

* Avg/yr is calculated without NR years

- Population trends on PNG appear variable but relatively stable since 1999 when survey transects were established.
- CO densities vary greatly due to semi-nomadic nature, related to unpredictable climate of Great Plains; from 1-pair/5 acres to 1-pair/143 acres.
- Downward trend at rate of 1-3% per year at larger scales (RMBO 2002).

Table 11.

(Monitoring Colorado Birds data, RMBO
2006)

| Mountain Bluebird ARNF | Number/transect/year | | | | | | | | | |
|---|----------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|----------------|
| Transect | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | Avg/yr* |
| AS28 | 0 | NR | 0 | NR | NR | NR | 0 | 0 | NR | 0.0 |
| AT02 | NR | NR | NR | NR | 1 | 1 | 2 | NR | NR | 1.3 |
| AT03 | NR | 4 | NR | 3 | 0 | 0 | NR | 0 | NR | 1.4 |
| AT04 | NR | 3 | NR | NR | 1 | 2 | 2 | 0 | NR | 1.6 |
| AT05 | NR | 2 | 0 | 0 | 0 | 0 | 1 | 0 | NR | 0.4 |
| AT06 | NR | 0 | 0 | 1 | 0 | 0 | 0 | 0 | NR | 0.1 |
| GR01 | NR | 0 | 0 | 0 | 0 | 0 | NR | 0 | NR | 0.0 |
| GR02 | NR | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NR | 0.0 |
| GR03 | NR | 0 | NR | 0 | 0 | 0 | 0 | 0 | NR | 0.0 |
| GR05-02 | NR | NR | NR | NR | 0 | NR | NR | 0 | NR | 0.0 |
| GR15 | NR | NR | 0 | NR | 0 | 0 | 0 | 0 | NR | 0.0 |
| HR05 | NR | NR | 0 | 0 | NR | 0 | 0 | 0 | NR | 0.0 |
| HR09 | NR | 0 | 0 | 0 | 0 | NR | 0 | 0 | NR | 0.0 |
| HR10 | NR | NR | 0 | 0 | 0 | NR | 0 | NR | NR | 0.0 |
| HR18 | NR | 0 | NR | NR | 0 | 0 | 0 | 0 | NR | 0.0 |
| HR25 | NR | 0 | 0 | 4 | 2 | 1 | 0 | 0 | 6 | 1.6 |
| MC03 | NR | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NR | 0.0 |
| MC27 | NR | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NR | 0.0 |
| PP13 | 0 | 0 | 0 | 0 | 0 | NR | NR | 0 | NR | 0.0 |
| PP15 | 0 | 0 | NR | 0 | 6 | NR | 1 | 1 | 15 | 3.0 |
| PP16 | 0 | 0 | 0 | 0 | 1 | NR | 1 | 6 | 16 | 0.7 |
| PP21 | 3 | 0 | 0 | 0 | 0 | NR | 0 | 2 | NR | 0.3 |
| PP29 | 0 | 0 | 0 | NR | NR | NR | NR | NR | NR | 0.0 |
| SA01-05 | NR | NR | NR | NR | NR | NR | NR | NR | 4 | 4.0 |
| SF16 | 0 | NR | 0 | 0 | NR | NR | 0 | NR | NR | 0.0 |
| SF17 | 0 | 0 | NR | 0 | 0 | NR | 0 | 0 | NR | 0.0 |
| SF30 | NR | 0 | 0 | NR | NR | NR | 0 | 0 | NR | 0.0 |
| Total birds | 3 | 9 | 0 | 8 | 11 | 4 | 7 | 9 | 10 | 6.8 |
| # of transects w/ hits | 1 | 3 | 0 | 3 | 5 | 3 | 5 | 3 | 2 | 2.8 |

NR = Transect not conducted in this year

* Avg/yr is calculated without NR years

- Transect survey data for ARNF indicate that mountain bluebird population trends are somewhat variable but stable.
- 2004 -20006 numbers have increased each year.
- Breeding trends at continental level slightly increased during 1966-2000 but winter trends are too variable to exhibit a trend (RMBO 2002).

Table 12.

Pygmy Nuthatch (Monitoring Colorado Birds data, RMBO 2006)

ARNF Number/transect/year

| Transect | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | Avg/yr* |
|-------------------------------|----------|----------|----------|----------|-----------|----------|-----------|----------|-----------|------------|
| AS28 | 0 | NR | 0 | NR | NR | NR | 0 | 0 | NR | 0.0 |
| AT02 | NR | NR | NR | NR | 0 | 0 | 0 | NR | NR | 0.0 |
| AT03 | NR | 0 | NR | 0 | 0 | 0 | NR | 0 | NR | 0.0 |
| AT04 | NR | 0 | NR | NR | 0 | 0 | 0 | 0 | NR | 0.0 |
| AT05 | NR | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NR | 0.0 |
| AT06 | NR | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NR | 0.0 |
| GR01 | NR | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NR | 0.0 |
| GR02 | NR | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NR | 0.0 |
| GR03 | NR | 0 | NR | 0 | 0 | 0 | 0 | 0 | NR | 0.0 |
| GR05-02 | NR | NR | NR | NR | 0 | NR | NR | 0 | NR | 0.0 |
| GR15 | NR | NR | 0 | NR | 0 | 0 | 0 | 0 | NR | 0.0 |
| HR05 | NR | NR | 0 | 0 | NR | 0 | 0 | 0 | NR | 0.0 |
| HR09 | NR | 0 | 0 | 0 | 1 | NR | 0 | 0 | NR | 0.2 |
| HR10 | NR | NR | 0 | 0 | 0 | NR | 0 | NR | 3 | 0.6 |
| HR18 | NR | 0 | NR | NR | 0 | 0 | 0 | 0 | NR | 0.0 |
| HR25 | NR | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NR | 0.0 |
| MC03 | NR | 0 | 0 | 0 | 0 | 0 | 4 | 0 | NR | 0.6 |
| MC27 | NR | 0 | 0 | 0 | 0 | 0 | 4 | 0 | NR | 0.6 |
| PP13 | 0 | 0 | 0 | 0 | 0 | NR | NR | 1 | 5 | 0.9 |
| PP15 | 0 | 0 | NR | 3 | 10 | NR | 0 | 1 | 4 | 2.6 |
| PP16 | 0 | 0 | 0 | 0 | 0 | NR | 5 | 3 | 1 | 1.1 |
| PP21 | 1 | 2 | 0 | 0 | 4 | NR | 14 | 0 | 1 | 2.8 |
| PP29 | 3 | 0 | 0 | NR | 0 | NR | NR | NR | NR | 0.8 |
| SF16 | 0 | NR | 0 | 0 | NR | NR | 0 | NR | NR | 0.0 |
| SF17 | 0 | 0 | NR | 0 | 0 | NR | 0 | 0 | NR | 0.0 |
| SF30 | NR | 0 | 2 | NR | NR | NR | 0 | 0 | NR | 0.5 |
| Total birds | 4 | 2 | 2 | 3 | 15 | 0 | 27 | 5 | 14 | 8.0 |
| # of transects w/ hits | 2 | 1 | 1 | 1 | 3 | 0 | 4 | 3 | 5 | 2.2 |

NR = Transect not conducted in this year

* Avg/yr is calculated without NR years

- Transect surveys indicate a highly variable trend. Appearing stable from 1998 thru 2001, then a dramatic increase in 2002 and 2004 and a return to lower and more stable levels in 2005- 2006. Note that transect surveys in typical habitat (ponderosa pine) were not conducted in 2003.
- No trend was discernable at larger geographic scales (RMBO 2002).

Table 13.

| | | (Monitoring Colorado Birds data, RMBO 2006) | | | | | | | | |
|-------------------------------|-------------|---|-------------|-------------|-------------|-------------|-------------|-------------|-------------|----------------|
| Warbling Vireo | | 2006) | | | | | | | | |
| ARNF | | Number/transect/year | | | | | | | | |
| Transect | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | Avg/yr* |
| AS28 | 21 | NR | 6 | NR | NR | NR | 1 | 8 | NR | 9.0 |
| AT02 | NR | NR | NR | NR | 0 | 0 | 0 | NR | NR | 0.0 |
| AT03 | NR | 0 | NR | 0 | 0 | 0 | NR | 0 | NR | 0.0 |
| AT04 | NR | 1 | NR | NR | 0 | 0 | 0 | 0 | NR | 0.2 |
| AT05 | NR | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NR | 0.0 |
| AT06 | NR | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NR | 0.0 |
| GR01 | NR | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NR | 0.0 |
| GR02 | NR | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NR | 0.0 |
| GR03 | NR | 0 | NR | 0 | 0 | 0 | 0 | 0 | NR | 0.0 |
| GR05-02 | NR | NR | NR | NR | 0 | NR | NR | 0 | NR | 0.0 |
| GR15 | NR | NR | 0 | NR | 0 | 0 | 0 | 0 | NR | 0.0 |
| HR01-05 | NR | NR | NR | NR | NR | NR | NR | NR | 4 | 4.0 |
| HR05 | NR | NR | 2 | 0 | NR | 0 | 0 | 0 | NR | 0.4 |
| HR09 | NR | 0 | 7 | 7 | 5 | NR | 1 | 5 | 8 | 4.7 |
| HR10 | NR | NR | 7 | 14 | 0 | NR | 1 | NR | NR | 5.5 |
| HR18 | NR | 0 | NR | NR | 0 | 0 | 0 | 0 | NR | 0.0 |
| HR25 | NR | 7 | 19 | 6 | 3 | 0 | 0 | 0 | 3 | 4.8 |
| MC03 | NR | 4 | 1 | 7 | 0 | 2 | 3 | 8 | NR | 3.6 |
| MC27 | NR | 4 | 0 | 2 | 0 | 0 | 4 | 13 | NR | 3.3 |
| NO01-05 | NR | NR | NR | NR | NR | NR | NR | NR | 4 | 4.0 |
| PP13 | 15 | 4 | 7 | 14 | 4 | NR | NR | 0 | 12 | 8.0 |
| PP15 | 2 | 0 | NR | 0 | 0 | NR | 0 | 0 | NR | 0.3 |
| PP16 | 0 | 4 | 6 | 16 | 3 | NR | 5 | 4 | 5 | 5.4 |
| PP21 | 0 | 0 | 0 | 3 | 6 | NR | 2 | 3 | 1 | 1.9 |
| PP29 | 7 | 12 | 5 | NR | 5 | NR | NR | NR | NR | 7.3 |
| SA01-05 | NR | NR | NR | NR | NR | NR | NR | NR | 19 | 19.0 |
| SF16 | 0 | NR | 0 | 0 | NR | NR | 0 | NR | 1 | 0.2 |
| SF17 | 0 | 4 | NR | 1 | 0 | NR | 0 | 0 | NR | 0.8 |
| SF30 | NR | 0 | 0 | NR | NR | NR | 0 | 0 | NR | 0.0 |
| Total birds | 45 | 40 | 60 | 70 | 26 | 2 | 17 | 41 | 57 | 39.8 |
| # of transects w/ hits | 4 | 8 | 9 | 9 | 6 | 1 | 7 | 6 | 8 | 6.4 |

NR = Transect not conducted in this year

* Avg/yr is calculated without NR years

- Transect survey counts indicate variable population trends on ARNF, with decreases from 2001 thru 2004 and a return to levels similar to 1998-1999 in 2005-2006, noting that several transects were not read in 2003.
- A slight increasing breeding trend is apparent at the continental scale in each of 3 different time periods during 1966-2000 (RMBO 2002).

Table 14.

| | | (Monitoring Colorado Birds data, RMBO 2006) | | | | | | | | |
|-------------------------------|-------------|---|-------------|-------------|-------------|-------------|-------------|-------------|-------------|----------------|
| Wilson's Warbler | | Number/transect/year | | | | | | | | |
| ARNF | | | | | | | | | | |
| Transect | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | Avg/yr* |
| AS28 | 1 | NR | 0 | NR | NR | NR | 0 | 0 | NR | 0.3 |
| AT02 | NR | NR | NR | NR | 0 | 0 | 0 | NR | NR | 0.0 |
| AT03 | NR | 0 | NR | 0 | 0 | 0 | NR | 0 | NR | 0.0 |
| AT04 | NR | 0 | NR | NR | 0 | 1 | 0 | 1 | NR | 0.4 |
| AT05 | NR | 0 | 0 | 3 | 0 | 6 | 1 | 0 | NR | 1.4 |
| AT06 | NR | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NR | 0.0 |
| GR01 | NR | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NR | 0.0 |
| GR02 | NR | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NR | 0.0 |
| GR03 | NR | 0 | NR | 0 | 0 | 0 | 0 | 0 | NR | 0.0 |
| GR05-02 | NR | NR | NR | NR | 0 | NR | NR | 0 | NR | 0.0 |
| GR15 | NR | NR | 0 | NR | 0 | 0 | 0 | 0 | NR | 0.0 |
| HR01-05 | NR | NR | NR | NR | NR | NR | NR | NR | 4 | 4.0 |
| HR05 | NR | NR | 4 | 13 | NR | 0 | 4 | 0 | 3 | 4.0 |
| HR09 | NR | 6 | 7 | 16 | 3 | NR | 0 | 5 | 12 | 7.0 |
| HR10 | NR | NR | 4 | 1 | 3 | NR | 6 | NR | 11 | 5.0 |
| HR18 | NR | 0 | NR | NR | 0 | 0 | 0 | 8 | 1 | 1.5 |
| HR25 | NR | 0 | 0 | 6 | 1 | 7 | 2 | 5 | 1 | 2.8 |
| MC03 | NR | 0 | 0 | 0 | 0 | 1 | 0 | 0 | NR | 0.1 |
| MC27 | NR | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NR | 0.0 |
| PP13 | 0 | 1 | 0 | 0 | 0 | NR | NR | 0 | NR | 0.2 |
| PP15 | 0 | 0 | NR | 0 | 0 | NR | 0 | 0 | NR | 0.0 |
| PP16 | 0 | 0 | 0 | 0 | 0 | NR | 0 | 0 | NR | 0.0 |
| PP21 | 0 | 0 | 0 | 0 | 0 | NR | 0 | 0 | NR | 0.0 |
| PP29 | 0 | 0 | 0 | NR | 0 | NR | NR | NR | NR | 0.0 |
| SA01-05 | NR | NR | NR | NR | NR | NR | NR | NR | 1 | 1.0 |
| SF16 | 0 | NR | 0 | 0 | NR | NR | 0 | NR | 6 | 1.2 |
| SF17 | 0 | 0 | NR | 0 | 0 | NR | 0 | 0 | NR | 0.0 |
| SF30 | NR | 0 | 0 | NR | NR | NR | 0 | 0 | NR | 0.0 |
| Total birds | 1 | 7 | 15 | 39 | 7 | 15 | 13 | 19 | 39 | 17.2 |
| # of transects w/ hits | 1 | 2 | 3 | 4 | 3 | 4 | 4 | 4 | 8 | 3.7 |

NR = Transect not conducted in this year

* Avg/yr is calculated without NR years

- ARNF transect counts reveal a highly variable trend with increases from 1998-2001, drop in 2002, and a return to average yearly levels in 2003-2005; 2006 indicates an increase.
- A slight downward breeding trend but no discernable winter trend at the continental scale (RMBO 2002).

Amphibians

Table 15. Boreal toad population trend data in and near Arapaho Roosevelt National Forests

(Boreal Toad Recovery Team 2005, Jungwirth 2003, Jackson 2004 and Jackson 2005).

Despite the discovery of new breeding sites on ARNF, and a few others statewide, survey data indicate a downward trend for boreal toad numbers in and near ARNF (22 breeding sites – see following 22 sub-tables) and state-wide (Boreal Toad Recovery Team 2005).

BO01 – Lost Lake (Middle Boulder Creek) – ARNF

Bd: Not tested

| 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 | None | 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 | Unk | None | Adequate monitoring |
| 2003 | 0/0/0 | Unk | None | 3 visits |
| 2004 | 0/0/0 | Unk | None | 2 visits |
| 2005 | 0/0/0 | Unk | None seen | Site visited 2 times |

CC01 - Vintage site (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 | Unk | None seen | No breeding observed |
| 2002 | | | | Not monitored |
| 2003 | 0/0/0 | Unk | None Seen | No evidence of breeding |
| 2004 | | | | Not monitored |
| 2005 | 0/0/0 | Unk | None seen | No evidence of breeding |

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) | Chytrid fungus mortality |
| 2000 | 34/34/34 | Unk | 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 | Unk | 3(M,A,1) | Several sites dried up |
| 2005 | 2/12/12 | Unk | 2(M,A) | Poor hatching success |

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(A0) | No evidence of breeding |
| 2003 | 1/1/1 | Yes | 1(M) | <50 metamorphs |
| 2004 | 4/4/4 | Unk | 2(1,A) | |
| 2005 | 0/0/0 | Unk | None seen | |

CC04 – Mount Bethel (Clear Creek) – ARNF

Bd: Positive (2005)

| 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 | Yes | 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 |

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. | Unk | 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 | Unk | 1(A) | Inadequate monitoring |
| 2000 | 0/0/0 | Unk | None seen | Monitoring adequate |
| 2001 | 3/0/0 | Unk | 1(A) | Inadequate monitoring |
| 2002 | | | | Site not monitored |
| 2003 | 1/1/1 | Unk | 1(A) | Few tadpoles found |
| 2004 | 0/0/0 | Unk | None seen | |
| 2005 | 0/0/0 | Unk | None seen | |

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) | Many subadults seen |
| 2002 | | | | Site not monitored |
| 2003 | | | | Site not monitored |
| 2004 | 0/0/0 | Unk | None Seen | |
| 2005 | 0/0/0 | Unk | 1(A) | 9 unsexed adults seen |

CC07 – Otter Mountain (Clear Creek South), ARNF

Bd: Negative (2003)

| Year | Males/Females /Egg Masses* | Recruitment** | Age Classes*** | Comments |
|------|----------------------------|---------------|----------------|-------------------|
| 2003 | 1/1/1 | Unk | | 200 tadpoles seen |
| 2004 | 2/2/2 | Unk | 1(A) | 50 tadpoles seen |
| 2005 | 0/0/0 | Unk | 1(A) | 1 adult seen |

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 breeding observed |
| 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 |

GR02 – Pole Creek – (Pole Creek)

Bd: Positive (2002)

| 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 | Unk | 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 | Unk | 3(M,S,A) | >150 metamorphs |
| 2005 | 34/8/8 | Unk | 4(M,1,S,A) | >3000 metamorphs |

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 | Unk | None | Monitoring adequate |
| 2001 | 0/0/0 | Unk | 1(S) | 1 sub-adult, no breeding |
| 2002 | 0/0/0 | Unk | None | |
| 2003 | | | | Site not monitored |
| 2004 | 0/0/0 | Unk | None | |
| 2005 | 0/0/0 | Unk | 1(A) | 1 adult seen |

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) | Discovered in 2001 |
| 2002 | 8/6/6 | Unk | 2(M,A) | <50 metamorphs |
| 2003 | 2/2/2 | Unk | 2(S,A) | Desiccation and predation |
| 2004 | 0/0/0 | Unk | None | |
| 2005 | 0/0/0 | Unk | None seen | |

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 | Unk | 4(M,1,S,A) | Cold water temps |
| 2005 | 2/1/1 | Unk | 2(1,S,A) | Metamorphs possible |

GR06 – Big Meadow (Big Meadow) – RMNP

Bd: Positive (2004)

| Year | Males/Females /Egg Masses* | Recruitment** | Age Classes*** | Comments |
|------|-------------------------------|---------------|----------------|----------|
| 2004 | 1/1/0 | Unk | 3(M,1,A) | |
| 2005 | 2/2/2 | Unk | 2(1,A) | |

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

Bd: Positive (2000)

| 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) | Chytrid 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 | |
| 2004 | 0/0/0 | Unk | None seen | Juveniles found along trail |
| 2005 | 3/3/3 | Unk | 1(A) | Larvae seen |

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

Bd: Positive (2001)

| 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 |

LR03 – Spruce Lake (Big Thompson) – RMNP

Bd: Negative (2005)

| Year | Males/Females /Egg Masses* | Recruitment** | Age Classes*** | Comments |
|------|-------------------------------|---------------|----------------|------------------------|
| 1996 | Unk | Yes | Unk | Reproduction presumed |
| 1997 | 3/1/? | Unk | 3(A,1,S) | 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,1,A) | Three 1-year old seen |
| 2001 | 10/2/2 | Unk | 2(S,A) | Tadpoles observed |
| 2002 | 15/3/3 | Unk | 1(A) | No metamorphs observed |
| 2003 | 12/1/1 | Unk | 1(A) | No tadpoles observed |
| 2004 | 10/2/2 | Unk | 1(A) | No tadpoles observed |
| 2005 | 7/5/5 | Unk | 1(A) | Larvae observed |

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 further – unsuccessful translocation |

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 |

LR07 – Trout Creek (Trout Creek) – ARNF

Bd: Not tested

| Year | Males/Females /Egg Masses* | Recruitment** | Age Classes*** | Comments |
|------|-------------------------------|---------------|----------------|--------------------|
| 2004 | 2/2/2 | Unk | 1(A) | Site found 6/15/04 |
| 2005 | 0/0/0 | Unk | None seen | |

LR08 – Panhandle Creek (Panhandle Creek) – ARNF

Bd: Not tested

| Year | Males/Females /Egg Masses* | Recruitment** | Age Classes*** | Comments |
|------|-------------------------------|---------------|----------------|----------|
| 2004 | 2/2/0 | Unk | 2(S,A) | New Site |
| 2005 | 0/0/0 | Unk | None seen | |

LR09 – Faye Lakes (Faye Lakes) – RMNP

Bd: Negative (2005)

| Year | Males/Females /Egg Masses* | Recruitment** | Age Classes*** | Comments |
|------|----------------------------|---------------|----------------|----------|
| 2004 | 4/4/0 | Unk | 2(M,A) | New Site |
| 2005 | 2/2/2 | Unk | 2(1,A) | |

* 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).

Fish

Table 16. Brook trout (*Salvelinus fontinalis*) population estimates on the Arapaho-Roosevelt National Forests

| Stream Name | Years surveyed | | | | | | |
|-------------------------------|----------------|------|------|------|------|------|-----|
| | 1979 | 1993 | 1998 | 2000 | 2003 | 2005 | |
| Fraser River fish/mile | 106 | 211 | 437 | 425 | 299 | | |
| Vasquez Crk fish/mile | 0 | 8 | 414 | 258 | | | |
| St Louis Crk fish/mile | 317 | 612 | 201 | 1647 | 1973 | 3408 | 531 |
| Kinney Crk fish/mile | 239 | 387 | 143 | | | | |
| Little Muddy Crk fish/mile | 0 | 352 | 1083 | 1175 | | | |
| Deadman Creek fish/mile | 211 | 1503 | 105 | | | | |
| WFK Clear Crk fish/mile | 0 | 198 | 271 | 860 | 798 | 883 | |

Table 17. Brown trout (*Salmo trutta*) population estimates on the Arapaho-Roosevelt National Forests

| Stream Name | Years surveyed | | | | |
|---|--------------------|---------------------|---------------------|---------------------|---------------------|
| Big Thompson fish/mile | 1974 195 | 1987 333 | 1989 555 | 2000 1149 | |
| Nunn Creek fish/mile | 1981 106 | 2000 1475 | 2003 97 | 2004 90 | 2006 2250 |
| Cache la Poudre River fish/mile | 1994 817 | 2000 1790 | 2001 1199 | 2002 258 | |

Table 18. Greenback cutthroat trout (*Oncorhynchus clarki stomias*) population estimates on the Arapaho-Roosevelt National Forests.

| Stream Name | Years surveyed | | | | | | |
|---|----------------------|----------------------|----------------------|----------------------|--------------------|--------------------|--------------------|
| Bard Creek fish/mile | 1981 0 | 1985 327.3 | 1987 211.2 | 1989 292.1 | 1991 186 | 1999 252 | 2001 129 |
| Como Creek fish/mile | 1986 739.2 | 1991 713 | 1995 985 | 1999 667 | | | |
| Roaring Creek fish/mile | 1981 84 | 1998 984 | 2003 784 | | | | |
| Black Hollow Creek fish/mile | 1984 475 | 1985 457 | 1988 352 | 1989 369 | 2003 484 | 2006 123 | |
| George Creek fish/mile | 1985 388 | 1988 440 | 1991 41 | 1997 52 | 2003 72 | 2006 143 | |
| West Fork Sheep Creek fish/mile | 1984 387 | 1987 598 | 1988 651 | 1991 258 | 1998 563 | 2003 365 | 2006 528 |

Table 19. Colorado River cutthroat trout (*Oncorhynchus clarki pleuriticus*) population estimates on the Arapaho-Roosevelt National Forests

| Stream Name | Years Surveyed | | | |
|--|--------------------|--------------------|---------------------|---------------------|
| Jim Creek fish/mile | 1992 5.3 | 2000 36 | 2003 21.1 | |
| Little Vasquez Creek fish/mile | 1985 185 | 1992 181 | 1998 20 | 2001 25.2 |
| Hamilton Creek fish/mile | 1992 109 | 2000 352 | 2003 176 | |
| Kinney Creek fish/mile | 1992 91 | 1997 422 | 2000 29 | 2003 123 |
| Cabin Creek fish/mile | 1992 704 | 2000 380 | 2003 174 | |
| Steelman Creek fish/mile | 2000 25 | 2003 90 | 2004 231 | |

Table 20. Plains topminnow (*Fundulus sciadicus*) abundance estimates on the Pawnee National Grasslands

| Stream Name | Year of surveys | | | | | | |
|---|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|---------------------|
| Willow Creek fish/pothole | 1998 370 | 1999 258 | 2000 195 | 2001 40 | 2002 5 | 2005 80 | 2006 2717 |
| Howard Creek fish/pothole | 1998 n/a | 1999 36 | 2000 902 | 2001 268 | 2002 602 | 2005 357 | 2006 480 |
| South Pawnee Crk fish/pothole | 1998 n/a | 1999 68 | 2000 n/a | 2001 25 | 2002 819 | 2005 563 | 2006 468 |

Table 21. Plains killifish (*Fundulus zebrinus*) abundance estimates on the Pawnee National Grasslands

| Stream Name | Years surveyed | | | | | |
|---|-------------------|------------------|-------------------|--------------------|--------------------------|--------------------|
| Little Crow Crk fish/pothole | 1998 10 | 1999 0 | 2000 39 | 2001 2 | 2005 dry creek | 2006 n/a |
| Little Owl Creek fish/pothole | 1998 13 | 1999 1 | 2001 0 | 2005 0 | 2006 n/a | |
| South Pawnee Creek fish/pothole | 1998 8 | 1999 0 | 2001 19 | 2002 322 | 2005 22 | 2006 4* |

* not an adequate sample due to sampling difficulty