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**A Transplant of Arctic Grayling to Bons Pond at the Red Dog  
Mine**

**by Alvin G. Ott  
and Alan H. Townsend**

North Fork Red Dog Creek  
Photograph by Al Ott 1999

**October 2003**

Alaska Department of Natural Resources  
Office of Habitat Management and Permitting

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A TRANSPLANT OF ARCTIC GRAYLING TO BONS POND AT THE RED DOG  
MINE

**By**

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## Table of Contents

<a href="#">Table of Contents</a> .....	i
<a href="#">List of Tables</a> .....	ii
<a href="#">List of Figures</a> .....	iii
<a href="#">Acknowledgements</a> .....	iv
<a href="#">Executive Summary</a> .....	v
<a href="#">Introduction</a> .....	1
<a href="#">Methods</a> .....	4
<a href="#">Sample Sites</a> .....	4
<a href="#">Water Quality</a> .....	4
<a href="#">Fish</a> .....	4
<a href="#">Results and Discussion</a> .....	6
<a href="#">Water Quality</a> .....	6
<a href="#">Arctic Grayling in Bons Pond</a> .....	7
<a href="#">Literature Cited</a> .....	15
<a href="#">Appendix 1, Arctic Grayling Transplanted from North Fork Red Dog Creek</a> .....	16
<a href="#">Appendix 2, Arctic grayling marked in Bons Pond in summer 2003</a> .....	20

## List of Tables

<a href="#">1. Water quality, Bons Pond</a> .....	6
<a href="#">2. Size ranges of Arctic grayling for each respective age class</a> .....	13

## List of Figures

<a href="#">1. Facilities and waterbodies near the Red Dog Mine in northwest Alaska</a> .....	3
<a href="#">2. Length frequency distribution for Arctic grayling transplanted</a> .....	7
<a href="#">3. Length frequency distribution of Arctic grayling in Bons Pond in June 2003</a> .....	8
<a href="#">4. Length frequency distribution of mature male and female</a> .....	9
<a href="#">5. Length frequency distribution of immature Arctic grayling</a> .....	10
<a href="#">6. Waterfall in the outlet channel from Bons Pond</a> .....	11
<a href="#">7. Fyke-net set in Bons Pond located in the outlet channel</a> .....	11
<a href="#">8. Length frequency distribution of Arctic grayling in Bons Pond in early July</a> .....	12
<a href="#">9. Length frequency distribution of Arctic grayling in Bons Pond in early August</a> .....	12

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## **Executive Summary**

We transplanted Arctic grayling from North Fork Red Dog Creek in 1994 (107 juvenile and adult fish) and 1995 (about 200 age-0 fish) to Bons Pond located near the Red Dog Mine. In summer 2003, we documented that an Arctic grayling population has been established in Bons Pond. The estimated population for fish > 200 mm long in summer 2003 was 6,773. Spawning in June 2003 was observed in the outlet channel from the pond and in Bons Creek, one of the tributaries feeding Bons Pond. Age-0 fish were seen in the outlet channel in July 2003.

There is no evidence that any of the juvenile Dolly Varden moved to Bons Pond in summer 1994 survived.



## Introduction

The Red Dog lead and zinc mine is located in northwest Alaska, about 130 km north of Kotzebue and 75 km inland from the coast of the Chukchi Sea. Mine operations and facilities and the surrounding vegetation and wildlife are described in Weber Scannell and Ott (1998). Aquatic resources in Ikalukrok Creek and the Wulik River are reported in Weber Scannell and Ott (2001).

Discussions with Teck Cominco Alaska Inc. (TCAK) personnel in 1993 revealed that there was a high level of interest in trying to develop a recreational fishery for mine workers. Company policy prohibits mine employees from hunting or fishing while at work at the Red Dog mine.

Previous work by the Alaska Department of Fish and Game (ADF&G) on the North Slope led to development of a recreational fishery in a flooded mine site (Mine Site B) in the Kuparuk River Unit (Roach 1993, Hemming 1994, and Hemming 1995). Arctic grayling (*Thymallus arcticus*) from the Sagavanirktok and Kuparuk rivers were moved in 1989 and 1992 to Mine Site B. A viable self-sustaining population of Arctic grayling was established and the associated recreational fishery still exists today.

In early 1994, we submitted an application to obtain two Fish Transport Permits from the ADF&G. In March 1994 we obtained approval to move Arctic grayling (Fish Transport Permit 94A-0004) and juvenile Dolly Varden (*Salvelinus malma*) (Fish Transport Permit 94A-0005) to Bons Pond. A complete description of the experimental fish transport project was provided to TCAK and the Subsistence Advisory Committee for their consideration. Our objective was to establish a viable self-sustaining population of Arctic grayling and Dolly Varden in Bons Pond and create a recreational fishery for TCAK personnel. Current company policy prohibits fishing in Bons Pond.

Bons Pond is a man-made impoundment created by construction of an earthen dam across the valley. The dam was built in 1997/1998. There were no fish present in Bons Creek upstream of a series of impassable waterfalls and chutes about 1 km below the Bons Creek dam.

Water flow out of Bons Pond travels through a bedrock cut and then over a near vertical waterfall about 13 m high. The area inundated by the reservoir contains ice-rich organics similar to the area flooded by the Fort Knox water supply reservoir in Interior Alaska. Water from Bons Pond is used to supply make-up water for the mill and potable water for the camp. Bons Pond has a maximum depth of about 15 m with a surface area of about 10.8 ha. Bons Pond is fed by two unnamed creeks and by Bons Creek (Figure 1).

## **Methods**

### ***Sample Sites***

Sites selected as the source of Arctic grayling for the transplant included North Fork Red Dog and Ikalukrok creeks (Figure 1). Dolly Varden were collected from Anxiety Ridge Creek. These creeks, including Bons Pond, are all in the Ikalukrok Creek drainage.

### ***Water Quality***

Temperature (°C), dissolved oxygen concentration (mg/L), dissolved oxygen percent saturation (barometrically corrected), pH, specific conductance ( $\mu$  S/cm), and depth (m) were measured with a Hydrolab® Minisonde® water quality multiprobe connected to a Surveyor® 4 digital display unit. The meter was calibrated to suggested specifications prior to use in the field. The dissolved oxygen was calibrated using the open-air method in the field. Conductivity and pH were calibrated with standard solutions. Water quality measurements were made at the surface, at 1 m depth intervals, and at the bottom.

### ***Fish***

Fish sampling methods and gear used to collect Arctic grayling for the transplant included angling for adults and sub-adults, and seining for age-0 fish. Dolly Varden juveniles were collected in minnow traps baited with salmon roe. Arctic grayling > 200 mm were measured, the adipose fin clipped, and then marked with a numbered Floy® internal anchor tag. Arctic grayling adults and sub-adults and age-0 fish from North Fork Red Dog Creek were moved to Bons Pond in a plastic bag in a bucket that was oxygenated with a battery-powered bubbler and carried in the backpack. Arctic grayling adults captured in Ikalukrok Creek were moved to Bons Pond in an oxygenated cooler by helicopter. All fish were released directly into Bons Pond.

Fish sampling methods used in Bons Pond to capture Arctic grayling included angling and trapping with fyke-nets. Entrance frames were either 0.9 m<sup>2</sup> or 1.2m<sup>2</sup> or 0.69 m by 0.99 m (mini-fyke). The larger fyke-nets were 3.7 m long, had five hoops, a 1.8 m cod end, and two 0.9 m by 7.6 m wing nets attached to the entrance frame. The mini-fyke nets were 3.7 m long, had four hoops, a 1.8 m cod end, and two 0.91 m by 4.6 m wing nets. All netting was 10 mm square mesh. Center leads varied from 7.6 m to 30.4 m and

were deployed to the maximum extent possible without submerging the top of the entrance frame. Nets were set perpendicular to or at an angle to the shore.

The abundance of Arctic grayling was estimated using Chapman's modification of the Lincoln-Petersen two-sample mark-recapture model (Chapman 1951),

$$\hat{N}_c = \left\{ \frac{(n_1 + 1)(n_2 + 1)}{(m_2 + 1)} \right\} - 1,$$

where  $\hat{N}_c$  = estimated population,  $n_1$ =fish marked in first capture event,  $n_2$ =fish captured during recapture event, and  $m_2$ =fish captured during recapture event that were marked in the capture event. Variance was calculated as: (Seber 1982)

$$\text{var}(\hat{N}_c) = \left\{ \frac{(n_1 + 1)(n_2 + 1)(n_1 - m_2)(n_2 - m_2)}{(m_2 + 1)^2(m_2 + 2)} \right\}.$$

95% CI for the population estimate was calculated as

$$95\%C.I. = N_c \pm (1.960)\sqrt{\text{var}(\hat{N}_c)}.$$

## Results and Discussion

### *Water Quality*

Maximum depth of Bons Pond was found using a sonar depth finder. Water quality measurements were conducted at the deepest point on August 12, 2003 (Table 1).

Dissolved oxygen ranged from a low of 4.14 to a high of 6.97 mg/L. We were unable to calibrate dissolved oxygen and meter fluctuations were about 1 to 3 mg/L. Bons Pond was strongly stratified between four and five meters as the temperature went from 9.63 to 7.21°C. Water was slightly basic and conductivities ranged from 230.3 to 244.7  $\mu$  S/cm.

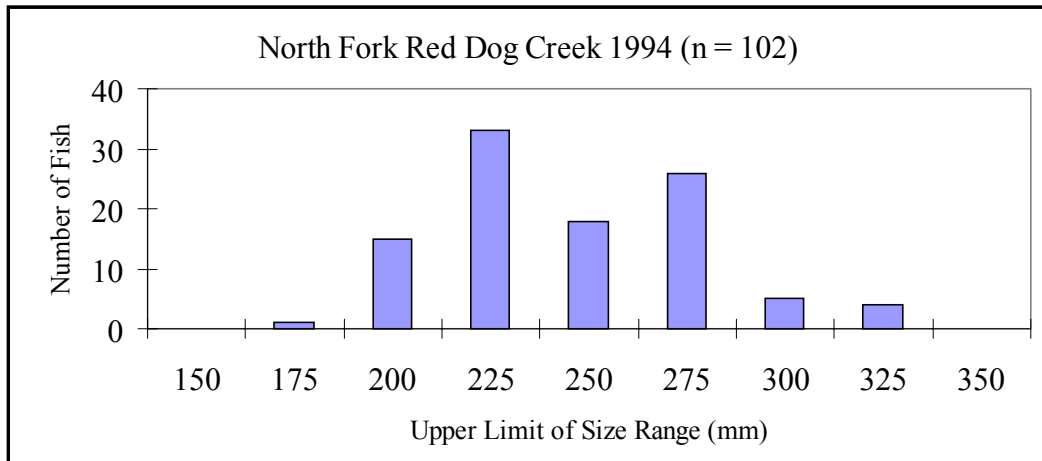
**Table 1. Water quality, Bons Pond**

			% Saturation	Dissolved		
	Depth	Temperature	Dissolved	Oxygen	Conductivity	
Date	m	°C	Oxygen	mg/L	$\mu$ S/cm	pH
8/11/03	0	9.90	37.2	4.47	231.8	8.05
	1	9.91	40.0	4.27	231.9	8.02
	2	9.89	39.8	4.47	232.2	8.02
	3	9.83	40.1	4.50	232.2	8.01
	4	9.63	41.9	4.14	232.1	7.98
	5	7.21	48.6	5.93	235.7	7.80
	6	6.46	46.7	5.53	230.3	7.69
	7	5.97	50.1	6.42	233.0	7.58
	8	5.91	58.6	6.47	239.4	7.54
	9	5.83	49.1	6.08	241.0	7.52
	10	5.78	53.4	6.97	244.6	7.49
	11	5.64	46.0	5.60	244.7	7.45
	12	5.53	47.8	6.48	246.4	7.41
	13	5.51	53.4	6.60	246.8	7.39
	13.5	5.48	49.8	6.05	247.4	7.38

### ***Arctic Grayling in Bons Pond***

In summer 1994, we moved 102 Arctic grayling from North Fork Red Dog Creek to Bons Pond (Appendix 1). Ninety-eight of the fish were marked with numbered Floy-tags®.

Arctic grayling from North Fork Red Dog Creek ranged in size from 158 to 325 mm (Figure 2). We also moved five Arctic grayling (350, 355, 358, 390, and 425 mm) from Ikalukrok Creek near Dudd Creek to Bons Pond on July 27, 1994.



**Figure 1. Length frequency distribution for Arctic grayling transplanted from North Fork Red Dog Creek to Bons Pond in 1994.**

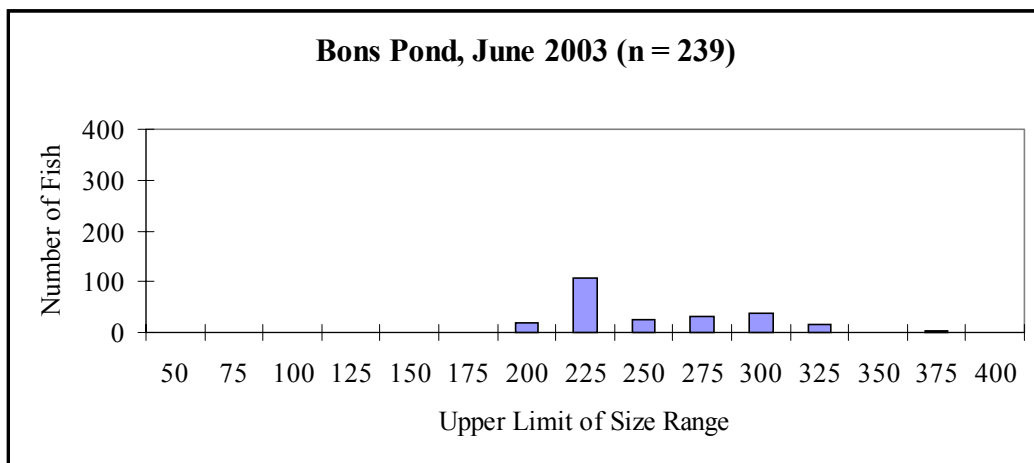
Juvenile Dolly Varden (n = 97, range 66 – 142 mm, average 104 mm, SD = 1.7) captured in Anxiety Ridge Creek in summer 1994 were transplanted to Bons Pond in late June and late July. In summer 1995 (August 15), about 200 age-0 Arctic grayling (40 to 45 mm long) seined in North Fork Red Dog Creek were moved to Bons Pond.

In September 1994, one of the marked Arctic grayling was caught in the Wulik River below Tutak Creek. In summer 1995, 1996, and 1997, twelve more of the marked Arctic grayling that had been moved to Bons Pond were recaptured back in North Fork Red Dog Creek. In August 1995, a fyke-net was fished in the Bons Pond outlet channel. We

caught several age-0 Arctic grayling, probably those that had just been moved to Bons Pond. No other fish were caught.

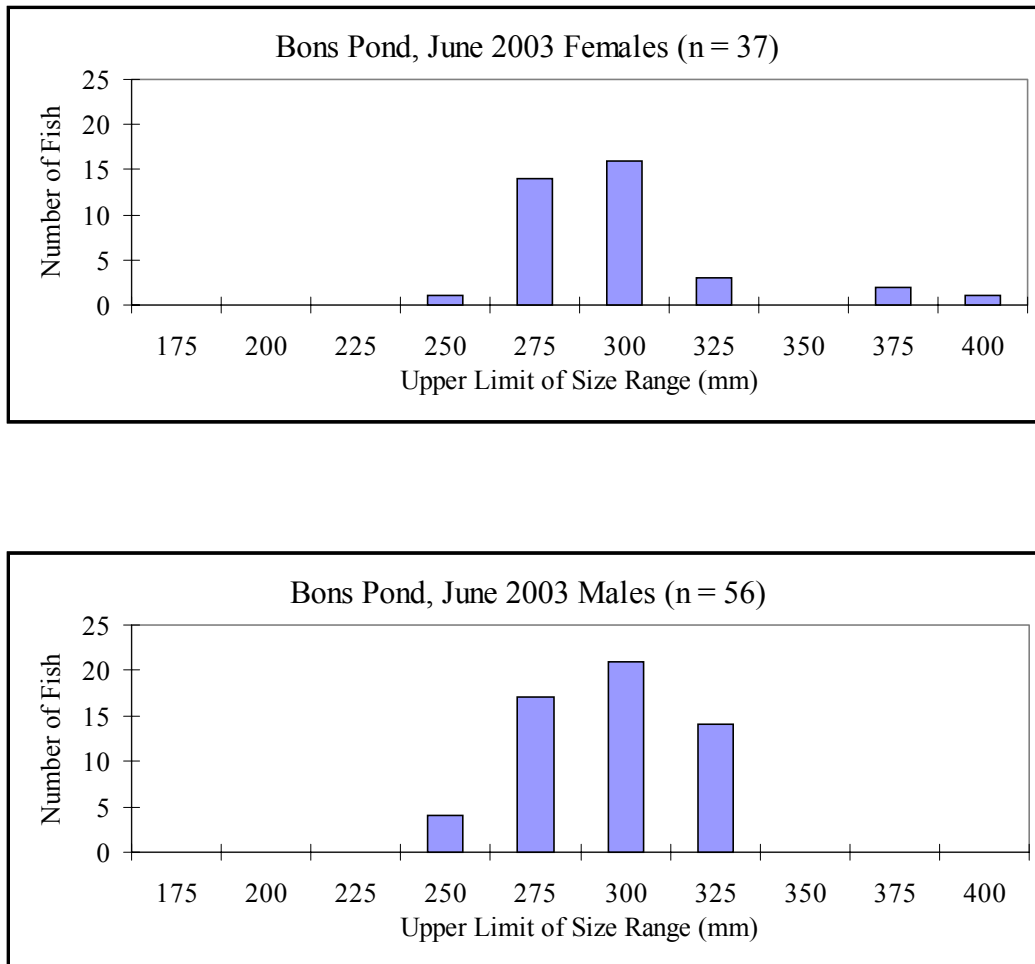
From summer 1996 until recently, we had assumed, based on the high percentage of recaptures in North Fork Red Dog Creek and fyke-net results in 1995, that most, if not all, of the transplanted Arctic grayling and Dolly Varden left Bons Pond. In 2000, TCAK environmental staff reported seeing small fish, in schools, along the edge of Bons Pond. In summer 2001 and 2002, we observed juvenile Arctic grayling (10 to 15, < 200 mm) in Bons Creek, above Bons Pond, in a scour pool below a perched culvert. There is very little available habitat (< 100 m) upstream of the perched culvert. Bons Creek upstream of the culvert flows through a flume pipe that was installed in 1996 to bypass water around a waste rock dump that was leaching metals. TCAK constructed an interceptor ditch in 1996 to capture surface/subsurface flows from the waste rock dump and collected water is pumped to the tailing impoundment.

In June 2003 we initiated a sampling effort in Bons Pond to assess the population of Arctic grayling. It became apparent that there were large numbers of Arctic grayling in Bons Pond and Bons Creek. Adult Arctic grayling were actively spawning in the outlet of Bons Pond and in Bons Creek below the perched culvert. We captured 239 Arctic grayling (231 were marked) in mid-June 2003. Length-frequency for the Arctic grayling handled in mid-June is presented in Figure 3.



**Figure 2. Length frequency distribution of Arctic grayling in Bons Pond in June 2003.**

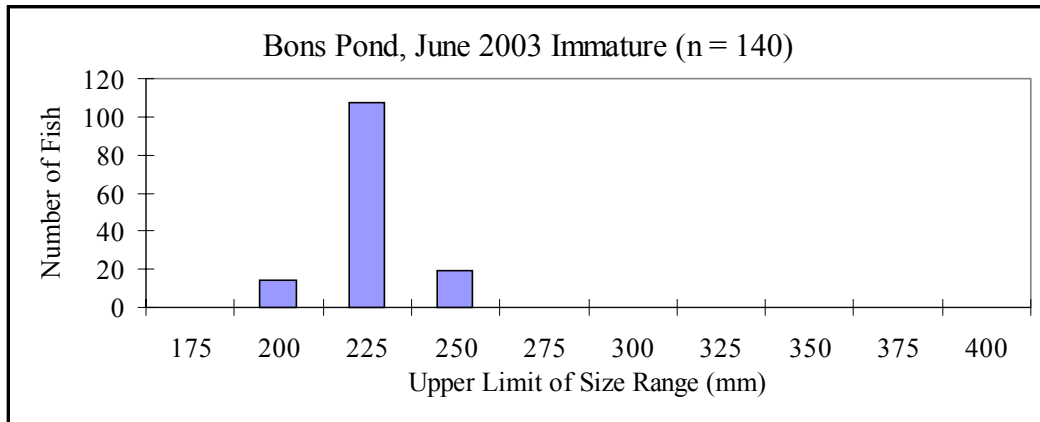
We looked at the length frequency distribution of adult males and females (i.e., ripe and spent fish) and immature fish captured in Bons Pond during mid-June 2003. Some of the Arctic grayling males and females in Bons Pond between 225 and 250 mm were ripe. All fish > 250 mm in our mid-June 2003 sample were ripe (Figure 4).



**Figure 3. Length frequency distribution of mature male and female Arctic grayling captured in Bons Pond in June 2003.**



All of the Arctic grayling captured in mid-June 2003 that were less than 225 mm were immature (Figure 5).



**Figure 4. Length frequency distribution of immature Arctic grayling in Bons Pond in June 2003.**

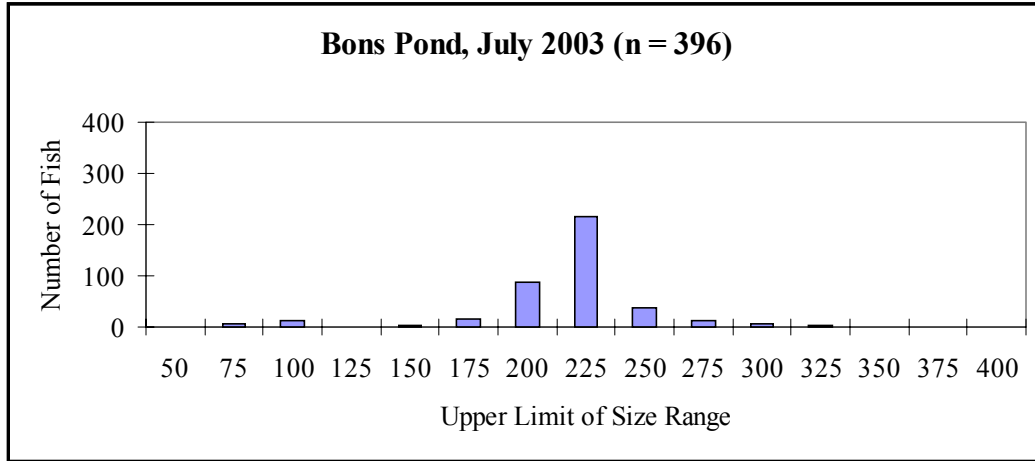
Our second sample event ran from July 5 to 9, 2003. On several occasions when the weather was sunny and winds calm, there were extensive hatches of midges. Under these conditions, active surface feeding by Arctic grayling could be seen throughout Bons Pond. Fish were captured during the July sample event using fyke-nets and by angling. The most effective fyke-net site was located in a shallow bay near the mouth of Bons Creek in an area with large amounts of woody debris and organic material. We also sampled a large scour pool in Bons Creek. The scour pool is located immediately downstream of the Bons Pond outlet channel and below a 13 m waterfall (Figure 6). Age-0 Arctic grayling were seen in the outlet channel from Bons Pond above the falls in the area where spawning had been observed in mid-June (Figure 7). Age-0 Arctic grayling were < 25 mm long.

In July, we caught 396 Arctic grayling in Bons Pond and the scour pool. Two of the 17 Arctic grayling caught in the scour pool had been marked in June in Bons Pond. We marked 263 new fish in Bons Pond, bringing the total number of marked fish in Bons Pond to 494. Marked Arctic grayling recaptures from below the falls were deleted from the total number of marks for Bons Pond.

**Figure 5. Waterfall in the outlet channel from Bons Pond.**

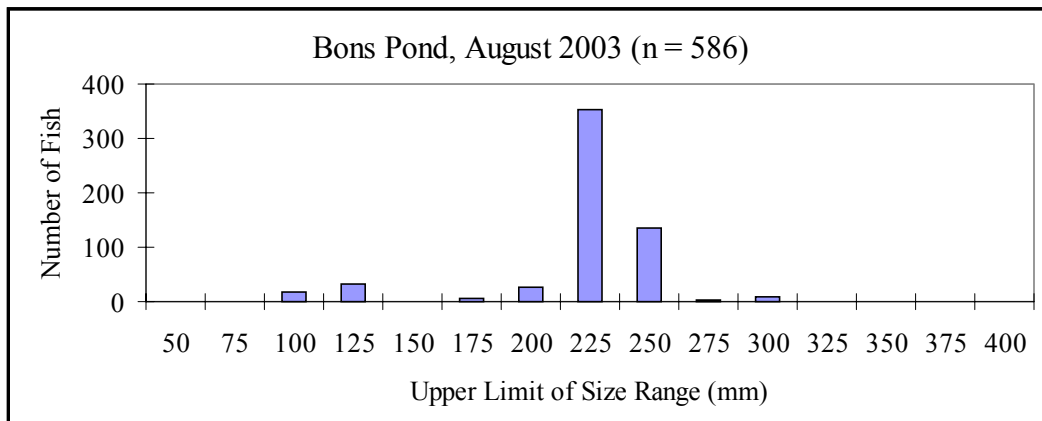
**Figure 6. Fyke-net set in Bons Pond located in the outlet channel, photograph taken looking to the northwest.**

Length frequency distribution for Arctic grayling caught in early July in Bons Pond is shown in Figure 8. We also caught a number of small Arctic grayling, most of which were captured in the fyke-nets (Figure 8).



**Figure 7. Length frequency distribution of Arctic grayling in Bons Pond in early July 2003.**

From August 7 to 12, we fished Bons Pond with fyke-nets and by angling, and caught 586 Arctic grayling. Length frequency distribution for the Arctic grayling is presented in Figure 9. Most of the small fish (< 150 mm long) were caught in the fyke-nets.



**Figure 8. Length frequency distribution of Arctic grayling in Bons Pond in early August 2003.**

No new marks were put out during the August sample event. Of the 478 Arctic grayling (> 200 mm) captured, 34 were recaptures of fish that had been marked in June and July 2003. Sixteen of the recaptures were marked in mid-June and 18 were tagged in early July. Our estimated population of Arctic grayling (fish > 200 mm long) in Bons Pond is 6,773 (95% CI 4,719 to 8,827).

Scale samples were taken from 49 Arctic grayling caught in Bons Pond in July 2003. We attempted to take scales from the various size classes present. All ages from 1 to 5 were present, but there was only one age 2 fish in our sample. Size ranges for each age class are presented in Table 2. The majority of the Arctic grayling in our sample were aged at 3 and 4. The dominant size class for the Arctic grayling in Bons Pond is between 200 and 225 mm, mostly age 3 fish that would have been age-0 in 2000.

**Table 2. Size ranges of Arctic grayling for each respective age class.**

Age	Length (range, mm)	Number of Fish	Year at Age-0
1	67 to 118	7	2002
2	141	1	2001
3	130 to 228	18	2000
4	225 to 294	15	1999
5	237 to 339	8	1998

We attempted to determine if the original transplant of subadult and adult Arctic grayling in 1994 and/or the age-0 transplant in 1995 was responsible for the establishment of the current fish population. To date, we have not recaptured in Bons Pond any marked Arctic grayling transplanted in 1994, although there were nine fish transplanted that were not marked. As noted previously, 12 of the marked fish left Bons Pond and were recaptured from 1995 through 1997 in North Fork Red Dog Creek.

Age-0 Arctic grayling moved to Bons Pond in 1995 that survived would have been age 3 in the spring of 1998. Since we have age 5 fish in the population, successful spawning

had to occur in spring 1998 and it is unlikely that the age-0 fish would have been mature at that time. Therefore, it seems highly likely that a small number of the adult and subadult Arctic grayling moved in 1994 stayed in the pond and spawned during spring 1998.

The current Arctic grayling population is dominated by Arctic grayling between 200 and 225 mm (i.e., age 3 fish that would have been spawned in spring 2000). By spring 2000, if some of the age-0 fish from 1995 survived, they would have been age 5. We conclude that a combination of the two transplants resulted in the current Arctic grayling population.

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**Appendix 1, Arctic Grayling Transplanted from North Fork Red Dog Creek to Bons Pond**

Date	Length	Tag Number	Color	Adipose Clip	Recapture Date	Recapture Location	Length (mm)
6/27/1994	205	3426	Yellow	Yes	6/26/1995	North Fork	265
					6/27/1997	North Fork	336
6/27/1994	227	3427	Yellow	Yes			
6/27/1994	205	3428	Yellow	Yes			
6/27/1994	194	3429	Yellow	Yes			
6/27/1994	245	3430	Yellow	Yes			
6/27/1994	200	3431	Yellow	Yes			
6/27/1994	243	3432	Yellow	Yes			
6/27/1994	238	3433	Yellow	Yes			
6/27/1994	207	3434	Yellow	Yes	9/23/1994	Wulik	257
6/27/1994	221	3435	Yellow	Yes			
6/28/1994	265	3436	Yellow	Yes			
6/28/1994	295	3437	Yellow	Yes			
6/28/1994	320	3438	Yellow	Yes			
6/28/1994	295	3439	Yellow	Yes			
6/28/1994	260	3440	Yellow	Yes			
6/28/1994	262	3441	Yellow	Yes			
6/28/1994	273	3442	Yellow	Yes			
6/28/1994	240	3443	Yellow	Yes			
6/28/1994	247	3444	Yellow	Yes			
6/28/1994	271	3445	Yellow	Yes			
6/28/1994	268	3446	Yellow	Yes			
6/28/1994	255	3447	Yellow	Yes			
6/28/1994	317	3448	Yellow	Yes			
6/28/1994	235	3449	Yellow	Yes	6/29/1995	North Fork	288
6/28/1994	260	3450	Yellow	Yes			
6/28/1994	248	3401	Yellow	Yes			
6/28/1994	270	3402	Yellow	Yes			
6/28/1994	281	3403	Yellow	Yes			
6/28/1994	268	3404	Yellow	Yes			
6/28/1994	248	3405	Yellow	Yes			
6/28/1994	245	3406	Yellow	Yes			
6/28/1994	263	3407	Yellow	Yes			

## Appendix 1, Arctic Grayling Transplanted, continued

6/28/1994	270	3408	Yellow	Yes			
6/28/1994	248	3409	Yellow	Yes			
6/28/1994	270	3413	Yellow	Yes			
6/28/1994	295	3414	Yellow	Yes			
6/28/1994	280	3415	Yellow	Yes			
6/28/1994	325	3416	Yellow	Yes			
6/28/1994	238	3417	Yellow	Yes	6/26/1995	North Fork	290
6/28/1994	257	3418	Yellow	Yes			
6/28/1994	270	3419	Yellow	Yes	7/17/1995	North Fork	314
6/28/1994	275	3420	Yellow	Yes			
6/28/1994	316	3421	Yellow	Yes			
6/28/1994	260	3422	Yellow	Yes			
6/28/1994	230	3423	Yellow	Yes			
6/28/1994	241	3424	Yellow	Yes			
6/28/1994	258	3425	Yellow	Yes			
6/28/1994	210	3411	Yellow	Yes	7/17/1995	North Fork	278
7/26/1994	238	3101	Yellow	Yes			
7/26/1994	228	3102	Yellow	Yes			
7/26/1994	215	3103	Yellow	Yes			
7/26/1994	204	3104	Yellow	Yes			
7/26/1994	254	3105	Yellow	Yes			
7/26/1994	268	3106	Yellow	Yes			
7/26/1994	255	3107	Yellow	Yes	8/14/1995	North Fork	302
7/26/1994	183	3108	Yellow	Yes			
7/26/1994	255	3109	Yellow	Yes			
7/26/1994	222	3110	Yellow	Yes	7/17/1995	North Fork	265
7/26/1994	220	3111	Yellow	Yes			
7/26/1994	213	3112	Yellow	Yes			
7/26/1994	190	3113	Yellow	Yes			
7/26/1994	200	3114	Yellow	Yes	7/20/1995	North Fork	236
7/26/1994	198	3115	Yellow	Yes			
7/26/1994	255	3116	Yellow	Yes			
7/26/1994	210	3117	Yellow	Yes			



### Appendix 1, Arctic Grayling Transplanted, continued

7/26/1994	198	3118	Yellow	Yes			
7/26/1994	209	3119	Yellow	Yes	7/14/1996	North Fork	285
7/26/1994	214	3120	Yellow	Yes			
7/26/1994	218	3121	Yellow	Yes			
7/26/1994	211	3122	Yellow	Yes	6/29/1995	North Fork	248
7/26/1994	196	3123	Yellow	Yes			
7/26/1994	200	3124	Yellow	Yes	6/29/1995	North Fork	237
7/26/1994	206	3125	Yellow	Yes			
7/26/1994	205	3126	Yellow	Yes			
7/26/1994	200	3127	Yellow	Yes			
7/26/1994	256	3128	Yellow	Yes			
7/26/1994	207	3129	Yellow	Yes			
7/27/1994	217	3130	Yellow	Yes			
7/27/1994	190	3131	Yellow	Yes			
7/27/1994	210	3133	Yellow	Yes			
7/27/1994	200	3134	Yellow	Yes			
7/27/1994	212	3135	Yellow	Yes			
7/27/1994	214	3136	Yellow	Yes			
7/27/1994	203	3137	Yellow	Yes	8/15/1995	North Fork	272
7/27/1994	260	3138	Yellow	Yes			
7/27/1994	210	3139	Yellow	Yes			
7/27/1994	227	3140	Yellow	Yes			
7/27/1994	201	3141	Yellow	Yes			
7/27/1994	248	3142	Yellow	Yes			
7/27/1994	269	3143	Yellow	Yes			
7/27/1994	218	3144	Yellow	Yes			
7/27/1994	217	3145	Yellow	Yes			
7/27/1994	211	3146	Yellow	Yes			
7/27/1994	158	3147	Yellow	Yes			
7/27/1994	215	3148	Yellow	Yes			
7/27/1994	196	3149	Yellow	Yes			
7/27/1994	225	3150	Yellow	Yes			
7/27/1994	220	3132	Yellow	Yes			

## Appendix 1, Arctic Grayling Transplanted, concluded

7/27/1994	225			Yes			
7/27/1994	183			Yes			
7/27/1994	196			Yes			
7/27/1994	210			Yes			

7/27/1994 425 from Ik

7/27/1994 358 from Ik

7/27/1994 355 from Ik

7/27/1994 390 from Ik

7/27/1994 350 from Ik

Moved 102 Arctic grayling from North Fork to Bons Creek Reservoir

Note, the five larger Arctic grayling were captured in Ikalukrok Creek

and transported to the Bons Creek Reservoir on 7/27/94

On August 15, 1995, about 200 age-0 Arctic grayling were moved from North Fork Red Dog Creek to the Bons Creek Reservoir (40 to 45 mm)

Twelve of the tagged grayling moved to the Bons Creek Reservoir were captured in 1995, 1996, and 1997 in North Fork Red Dog Creek

**Appendix 2, Arctic grayling marked in Bons Pond in summer 2003.**

	Tag	Date	Capture		Recapture	Recapture	Length at	
Color	Length	Scar	Captured	Location	Sex	Date	Location	Recapture
Green	260		6/12/2003	Bons Pond	female			
Green	255		6/12/2003	Bons Pond	male			
Green	251		6/12/2003	Bons Pond	male			
Green	270		6/12/2003	Bons Pond	male			
Green	271		6/12/2003	Bons Pond	female			
Green	220		6/12/2003	Bons Pond	immature			
Green	262		6/12/2003	Bons Pond	male			
Green	223		6/12/2003	Bons Pond	immature			
Green	303		6/12/2003	Bons Pond	male			
Green	218		6/12/2003	Bons Pond	immature			
Green	242		6/12/2003	Bons Pond	immature			
Green	320		6/12/2003	Bons Pond	male			
Green	229		6/12/2003	Bons Pond	immature			
Green	233		6/12/2003	Bons Pond	immature			
Green	293		6/12/2003	Bons Pond	male			
Green	307		6/12/2003	Bons Pond	male			
Green	275		6/12/2003	Bons Pond	male			
Orange	300		6/12/2003	Bons Pond	male			
Orange	276		6/12/2003	Bons Pond	male			
Orange	261		6/13/2003	Bons Pond	male			
Orange	325		6/13/2003	Bons Pond	male			
Orange	309		6/13/2003	Bons Pond	male			
Orange	287		6/13/2003	Bons Pond	female			
Orange	286		6/13/2003	Bons Pond	male			
Orange	305		6/13/2003	Bons Pond	male			
Orange	305		6/13/2003	Bons Pond	male			
Orange	298		6/13/2003	Bons Pond	male			
Orange	295		6/13/2003	Bons Pond	male			
Orange	294		6/13/2003	Bons Pond	female			
Orange	268		6/13/2003	Bons Pond	female			
Orange	284		6/13/2003	Bons Pond	male			
Orange	249		6/13/2003	Bons Pond	male			
Orange	257		6/13/2003	Bons Pond	male			
Orange	236		6/13/2003	Bons Pond	male			
Orange	254		6/13/2003	Bons Pond	male			
Orange	237		6/13/2003	Bons Pond	immature			
Orange	208		6/13/2003	Bons Pond	immature	8/11/2003	Bons Pond	250

**Appendix 2, Arctic grayling marked in Bons Pond, continued**

Orange	205	6/13/2003	Bons Pond	immature			
Orange	220	6/13/2003	Bons Pond	immature	8/7/2003	Below Dam	256
Orange	303	6/13/2003	Bons Pond	female			
Orange	274	6/13/2003	Bons Pond	male			
Orange	286	6/13/2003	Bons Pond	male			
Orange	291	6/13/2003	Bons Pond	male			
Orange	266	6/13/2003	Bons Pond	male	7/8/2003	Bons Pond	265
Orange	277	6/13/2003	Bons Pond	female			
Orange	298	6/13/2003	Bons Pond	male			
Orange	269	6/13/2003	Bons Pond	male			
Orange	224	6/13/2003	Bons Pond	immature			
Orange	211	6/13/2003	Bons Pond	immature			
Orange	375	6/13/2003	Bons Pond	female			
Orange	267	6/13/2003	Bons Pond	female	7/7/2003	Bons Pond	263
Orange	285	6/13/2003	Bons Pond	female			
Orange	282	6/13/2003	Bons Pond	female			
Orange	269	6/13/2003	Bons Pond	male			
Orange	313	6/13/2003	Bons Pond	male			
Orange	220	6/13/2003	Bons Pond	immature	8/12/2003	Bons Pond	242
Orange	225	6/13/2003	Bons Pond	immature			
Orange	211	6/13/2003	Bons Pond	immature			
Orange	214	6/13/2003	Bons Pond	immature			
Orange	219	6/13/2003	Bons Pond	immature			
Orange	205	6/13/2003	Bons Pond	immature	8/11/2003	Bons Pond	220
Orange	295	6/13/2003	Bons Pond	female			
Orange	308	6/13/2003	Bons Pond	male			
Orange	302	6/13/2003	Bons Pond	male			
Orange	257	6/13/2003	Bons Pond	male			
Orange	270	6/13/2003	Bons Pond	male			
Orange	286	6/13/2003	Bons Pond	male			
Orange	275	6/13/2003	Bons Pond	female			
Orange	297	6/13/2003	Bons Pond	male			
Orange	225	6/13/2003	Bons Pond	immature			
Orange	268	6/13/2003	Bons Pond	female			
Orange	277	6/13/2003	Bons Pond	male			
Orange	213	6/13/2003	Bons Pond	immature			
Orange	210	6/13/2003	Bons Pond	immature			
Orange	310	6/13/2003	Bons Pond	male			

**Appendix 2, Arctic grayling marked in Bons Pond, continued**

Orange	290	6/13/2003	Bons Pond	female			
Orange	298	6/13/2003	Bons Pond	male			
Orange	277	6/13/2003	Bons Pond	female	7/6/2003	Below Dam	277
Orange	234	6/13/2003	Bons Pond	female			
Orange	215	6/13/2003	Bons Pond	immature			
Orange	247	6/13/2003	Bons Pond	male			
Orange	219	6/13/2003	Bons Pond	immature			
Orange	224	6/13/2003	Bons Pond	immature			
Orange	211	6/13/2003	Bons Pond	immature			
Orange	277	6/13/2003	Bons Pond	male			
Orange	259	6/13/2003	Bons Pond	female			
Orange	322	6/13/2003	Bons Pond	male			
Orange	261	6/13/2003	Bons Pond	female			
Orange	239	6/13/2003	Bons Pond	male			
Orange	232	6/13/2003	Bons Pond	immature			
Orange	237	6/13/2003	Bons Pond	immature			
Orange	222	6/13/2003	Bons Pond	immature			
Orange	211	6/13/2003	Bons Pond	immature	8/7/2003	Below Dam	242
Orange	216	6/13/2003	Bons Pond	immature			
Orange	225	6/13/2003	Bons Pond	immature			
Orange	259	6/13/2003	Bons Pond	male			
Orange	268	6/13/2003	Bons Pond	male			
Orange	283	6/13/2003	Bons Pond	female			
Orange	239	6/13/2003	Bons Pond	immature			
Orange	259	6/13/2003	Bons Pond	female			
Orange	210	6/13/2003	Bons Pond	immature			
Orange	223	6/13/2003	Bons Pond	immature			
Orange	203	6/13/2003	Bons Pond	immature			
Orange	232	6/13/2003	Bons Pond	immature			
Orange	201	6/13/2003	Bons Pond	immature	8/7/2003	Bons Pond	208
Orange	222	6/13/2003	Bons Pond	immature			
Orange	366	6/15/2003	Bons Pond	female			
Orange	271	6/15/2003	Bons Pond	male			
Orange	300	6/15/2003	Bons Pond	male	7/6/2003	Bons Pond	294
Orange	279	6/15/2003	Bons Pond	male			
Orange	249	6/15/2003	Bons Pond	immature	7/6/2003	Below Dam	262
Orange	218	6/15/2003	Bons Pond	immature			
Orange	211	6/15/2003	Bons Pond	immature			

**Appendix 2, Arctic grayling marked in Bons Pond, continued**

Orange	219	6/15/2003	Bons Pond	immature			
Orange	318	6/15/2003	Bons Pond	male			
Orange	289	6/15/2003	Bons Pond	male			
Orange	265	6/15/2003	Bons Pond	female			
Orange	218	6/15/2003	Bons Pond	immature			
Orange	206	6/15/2003	Bons Pond	immature			
Orange	228	6/15/2003	Bons Pond	immature			
Orange	224	6/15/2003	Bons Pond	immature			
Orange	229	6/15/2003	Bons Pond	immature			
Orange	212	6/15/2003	Bons Pond	immature			
Orange	220	6/15/2003	Bons Pond	immature			
Orange	388	6/15/2003	Bons Pond	female			
Orange	307	6/15/2003	Bons Pond	male			
Orange	221	6/15/2003	Bons Pond	immature			
Orange	212	6/15/2003	Bons Pond	immature			
Orange	244	6/15/2003	Bons Pond	immature			
Orange	222	6/15/2003	Bons Pond	immature			
Orange	203	6/15/2003	Bons Pond	immature			
Orange	221	6/15/2003	Bons Pond	immature			
Orange	225	6/15/2003	Bons Pond	immature			
Orange	231	6/15/2003	Bons Pond	immature	7/5/2003	Bons Pond	242
Orange	305	6/15/2003	Bons Pond	female			
Orange	275	6/15/2003	Bons Pond	female			
Orange	250	6/15/2003	Bons Pond	immature			
Orange	288	6/15/2003	Bons Pond	female			
Orange	256	6/15/2003	Bons Pond	female			
Orange	226	6/15/2003	Bons Pond	immature			
Orange	215	6/15/2003	Bons Pond	immature			
Orange	216	6/15/2003	Bons Pond	immature	8/11/2003	Bons Pond	228
Orange	203	6/15/2003	Bons Pond	immature			
Orange	217	6/15/2003	Bons Pond	immature			
Orange	218	6/15/2003	Bons Pond	immature			
Orange	191	6/15/2003	Bons Pond	immature			
Orange	209	6/15/2003	Bons Pond	immature	8/12/2003	Bons Pond	222
Orange	209	6/15/2003	Bons Pond	immature			
Orange	294	6/15/2003	Bons Pond	male	8/11/2003	Bons Pond	295

**Appendix 2, Arctic grayling marked in Bons Pond, continued**

Orange	283	6/15/2003	Bons Pond	female			
Orange	205	6/15/2003	Bons Pond	immature			
Orange	193	6/15/2003	Bons Pond	immature			
Orange	207	6/15/2003	Bons Pond	immature			
Orange	288	6/15/2003	Bons Pond	male			
Orange	294	6/15/2003	Bons Pond	female	8/12/2003	Bons Pond	290
Orange	272	6/15/2003	Bons Pond	female			
Orange	280	6/15/2003	Bons Pond	female			
Orange	270	6/15/2003	Bons Pond	female			
Orange	222	6/15/2003	Bons Pond	immature	8/11/2003	Bons Pond	230
Orange	212	6/15/2003	Bons Pond	immature			
Orange	201	6/15/2003	Bons Pond	immature			
Orange	209	6/15/2003	Bons Pond	immature			
Orange	212	6/15/2003	Bons Pond	immature	8/11/2003	Bons Pond	230
Orange	208	6/15/2003	Bons Pond	immature			
Orange	200	6/15/2003	Bons Pond	immature			
Orange	196	6/15/2003	Bons Pond	immature			
Orange	203	6/15/2003	Bons Pond	immature			
Orange	281	6/16/2003	Bons Pond	female			
Orange	217	6/16/2003	Bons Pond	immature			
Orange	200	6/16/2003	Bons Pond	immature			
Orange	218	6/16/2003	Bons Pond	immature			
Orange	219	6/16/2003	Bons Pond	immature			
Orange	218	6/16/2003	Bons Pond	immature			
Orange	200	6/16/2003	Bons Pond	immature			
Orange	220	6/16/2003	Bons Pond	immature			
Orange	208	6/16/2003	Bons Pond	immature			
Orange	190	6/16/2003	Bons Pond	immature			
Orange	220	6/16/2003	Bons Pond	immature			
Orange	206	6/16/2003	Bons Pond	immature			
Orange	200	6/16/2003	Bons Pond	immature			
Orange	191	6/16/2003	Bons Pond	immature			
Orange	191	6/16/2003	Bons Pond	immature			
Orange	200	6/16/2003	Bons Pond	immature			
Orange	300	6/16/2003	Bons Pond	female			
Orange	201	6/16/2003	Bons Pond	immature			
Orange	228	6/16/2003	Bons Pond	immature	8/12/2003	Bons Pond	238
Orange	221	6/16/2003	Bons Pond	immature			

**Appendix 2, Arctic grayling marked in Bons Pond, continued**

Orange	224	6/16/2003	Bons Pond	immature	8/11/2003	Bons Pond	242
Orange	212	6/16/2003	Bons Pond	immature			
Orange	215	6/16/2003	Bons Pond	immature			
Orange	222	6/16/2003	Bons Pond	immature			
Orange	220	6/16/2003	Bons Pond	immature			
Orange	219	6/16/2003	Bons Pond	immature			
Orange	200	6/16/2003	Bons Pond	immature			
Orange	219	6/16/2003	Bons Pond	immature			
Orange	212	6/16/2003	Bons Pond	immature			
Orange	206	6/16/2003	Bons Pond	immature			
	185	6/16/2003	Bons Pond	immature			
Orange	227	6/16/2003	Bons Pond	immature			
Orange	220	6/16/2003	Bons Pond	immature			
Orange	218	6/16/2003	Bons Pond	immature	8/12/2003	Bons Pond	232
Orange	236	6/16/2003	Bons Pond	immature			
Orange	207	6/16/2003	Bons Pond	immature			
Orange	221	6/16/2003	Bons Pond	immature	8/12/2003	Bons Pond	234
Orange	221	6/16/2003	Bons Pond	immature			
Orange	219	6/16/2003	Bons Pond	immature			
	190	6/16/2003	Bons Pond	immature			
	193	6/16/2003	Bons Pond	immature			
Orange	200	6/16/2003	Bons Pond	immature			
Orange	200	6/16/2003	Bons Pond	immature			
Orange	210	6/16/2003	Bons Pond	immature			
Orange	231	6/16/2003	Bons Pond	immature			
Orange	210	6/16/2003	Bons Pond	immature			
Orange	208	6/16/2003	Bons Pond	immature			
Orange	205	6/16/2003	Bons Pond	immature			
Orange	207	6/16/2003	Bons Pond	immature			
Orange	211	6/16/2003	Bons Pond	immature			
Orange	215	6/16/2003	Bons Pond	immature			
Orange	217	6/16/2003	Bons Pond	immature			
Orange	212	6/16/2003	Bons Pond	immature	7/7/2003	Bons Pond	211
Orange	312	6/16/2003	Bons Pond	female			
Orange	285	6/16/2003	Bons Pond	male			
Orange	276	6/16/2003	Bons Pond	female	7/5/2003	Bons Pond	272
Orange	215	6/16/2003	Bons Pond	immature			
Orange	225	6/16/2003	Bons Pond	immature			



**Appendix 2, Arctic grayling marked in Bons Pond, continued**

Orange	218	6/16/2003	Bons Pond	immature			
Orange	215	6/16/2003	Bons Pond	immature			
Orange	212	6/16/2003	Bons Pond	immature			
Orange	205	6/16/2003	Bons Pond	immature			
Orange	207	6/16/2003	Bons Pond	immature	8/11/2003	Bons Pond	211
Orange	220	6/16/2003	Bons Pond	immature			
Orange	214	6/16/2003	Bons Pond	immature			
Orange	219	6/16/2003	Bons Pond	immature	8/11/2003	Bons Pond	227
Orange	209	6/16/2003	Bons Pond	immature	7/6/2003	Bons Pond	226
	194	6/16/2003	Bons Pond	immature			
	193	6/16/2003	Bons Pond	immature			
	198	6/16/2003	Bons Pond	immature			
Orange	272	7/5/2003	Bons Pond				
Orange	320	7/5/2002	Bons Pond				
Orange	232	7/5/2002	Bons Pond		8/12/2003	Bons Pond	242
Orange	219	7/5/2002	Bons Pond				
	198	7/5/2002	Bons Pond				
Orange	201	7/5/2002	Bons Pond				
Orange	220	7/5/2002	Bons Pond				
Orange	219	7/5/2002	Bons Pond				
	180	7/5/2002	Bons Pond				
Orange	218	7/5/2002	Bons Pond				
Orange	224	7/5/2002	Bons Pond				
Orange	225	7/5/2002	Bons Pond				
Orange	219	7/5/2002	Bons Pond				
	178	7/5/2002	Bons Pond				
	194	7/5/2002	Bons Pond				
Orange	215	7/5/2002	Bons Pond				
Orange	206	7/5/2002	Bons Pond				
Orange	222	7/5/2002	Bons Pond				
Orange	227	7/5/2002	Bons Pond				
	183	7/5/2002	Bons Pond				
Orange	203	7/5/2002	Bons Pond				
Orange	229	7/5/2002	Bons Pond				
Orange	217	7/5/2002	Bons Pond				
Orange	221	7/5/2002	Bons Pond				
Orange	220	7/5/2002	Bons Pond				
Orange	214	7/5/2002	Bons Pond				

**Appendix 2, Arctic grayling marked in Bons Pond, continued**

Orange	244	7/5/2002	Bons Pond				
Orange	220	7/5/2002	Bons Pond				
Orange	220	7/5/2002	Bons Pond				
Orange	211	7/5/2002	Bons Pond				
Orange	228	7/5/2002	Bons Pond				
Orange	220	7/5/2002	Bons Pond				
Orange	207	7/5/2002	Bons Pond				
Orange	211	7/5/2002	Bons Pond				
Orange	304	7/5/2002	Bons Pond				
Orange	223	7/5/2002	Bons Pond				
	180	7/5/2002	Bons Pond				
	194	7/5/2002	Bons Pond				
	190	7/5/2002	Bons Pond				
	195	7/5/2002	Bons Pond				
	189	7/5/2002	Bons Pond				
	190	7/5/2002	Bons Pond				
	191	7/5/2002	Bons Pond				
	195	7/5/2002	Bons Pond				
Orange	201	7/5/2002	Bons Pond				
Orange	219	7/5/2002	Bons Pond				
Orange	208	7/5/2002	Bons Pond	8/11/2003	Bons Pond		217
Orange	226	7/5/2002	Bons Pond				
Orange	211	7/5/2002	Bons Pond				
Orange	210	7/5/2002	Bons Pond				
Orange	230	7/5/2002	Bons Pond				
Orange	200	7/5/2002	Bons Pond				
Orange	209	7/5/2002	Bons Pond				
Orange	210	7/5/2002	Bons Pond				
Orange	206	7/5/2002	Bons Pond				
Orange	216	7/5/2002	Bons Pond				
Orange	221	7/5/2002	Bons Pond				
Orange	254	7/5/2002	Bons Pond				
Orange	201	7/5/2002	Bons Pond				
Orange	222	7/5/2002	Bons Pond				
Orange	229	7/5/2002	Bons Pond				
Orange	212	7/5/2002	Bons Pond				
Orange	220	7/5/2002	Bons Pond	8/11/2003	Bons Pond		225
Orange	223	7/5/2002	Bons Pond				

**Appendix 2, Arctic grayling marked in Bons Pond, continued**

	191	7/5/2002	Bons Pond				
	186	7/5/2002	Bons Pond				
	194	7/5/2002	Bons Pond				
	190	7/5/2002	Bons Pond				
Orange	224	7/5/2002	Bons Pond				
Orange	216	7/5/2002	Bons Pond				
Orange	228	7/5/2002	Bons Pond				
Orange	215	7/5/2002	Bons Pond				
Orange	231	7/5/2002	Bons Pond				
Orange	214	7/5/2002	Bons Pond				
Orange	211	7/5/2002	Bons Pond				
Orange	205	7/5/2002	Bons Pond		8/12/2003	Bons Pond	203
Orange	232	7/5/2002	Bons Pond				
Orange	211	7/5/2002	Bons Pond				
	175	7/5/2002	Bons Pond				
	187	7/5/2002	Bons Pond				
Orange	204	7/5/2002	Bons Pond				
Orange	208	7/5/2002	Bons Pond		8/11/2003	Bons Pond	219
Orange	255	7/5/2002	Bons Pond				
Orange	201	7/5/2002	Bons Pond				
Orange	220	7/5/2002	Bons Pond				
Orange	228	7/5/2002	Bons Pond				
Orange	202	7/5/2002	Bons Pond				
Orange	220	7/5/2002	Bons Pond				
Orange	242	7/5/2003	Bons Pond				
	196	7/5/2002	Bons Pond				
	197	7/5/2002	Bons Pond				
	196	7/5/2002	Bons Pond				
Orange	223	7/5/2002	Bons Pond				
Orange	217	7/5/2002	Bons Pond		8/11/2003	Bons Pond	225
Orange	218	7/5/2002	Bons Pond				
Orange	229	7/5/2002	Bons Pond		8/12/2003	Bons Pond	242
Orange	221	7/5/2002	Bons Pond				
Orange	205	7/5/2002	Bons Pond				
Orange	203	7/5/2002	Bons Pond				
Orange	205	7/5/2002	Bons Pond				
Orange	203	7/5/2002	Bons Pond				
Orange	202	7/5/2002	Bons Pond				

**Appendix 2, Arctic grayling marked in Bons Pond, continued**

Orange	211	7/5/2002	Bons Pond				
Orange	219	7/5/2002	Bons Pond				
Orange	201	7/5/2002	Bons Pond				
Orange	201	7/5/2002	Bons Pond				
Orange	211	7/5/2002	Bons Pond				
Orange	214	7/5/2002	Bons Pond		8/11/2003	Bons Pond	225
Orange	218	7/5/2002	Bons Pond				
Orange	206	7/5/2002	Bons Pond				
Orange	213	7/5/2002	Bons Pond				
	196	7/5/2002	Bons Pond				
Orange	225	7/6/2003	Bons Pond				
Orange	212	7/6/2003	Bons Pond				
Orange	222	7/6/2003	Bons Pond				
Orange	232	7/6/2003	Bons Pond				
Orange	218	7/6/2003	Bons Pond				
Orange	213	7/6/2003	Bons Pond				
Orange	216	7/6/2003	Bons Pond				
Orange	218	7/6/2003	Bons Pond				
Orange	212	7/6/2003	Bons Pond				
Orange	210	7/6/2003	Bons Pond				
Orange	201	7/6/2003	Bons Pond				
Orange	215	7/6/2003	Bons Pond				
Orange	205	7/6/2003	Bons Pond				
Orange	217	7/6/2003	Bons Pond				
Orange	226	7/6/2003	Bons Pond				
Orange	201	7/6/2003	Bons Pond				
Orange	237	7/6/2003	Bons Pond				
Orange	214	7/6/2003	Bons Pond				
Orange	220	7/6/2003	Bons Pond				
Orange	205	7/6/2003	Bons Pond				
Orange	212	7/6/2003	Bons Pond				
	197	7/6/2003	Bons Pond				
	190	7/6/2003	Bons Pond				
	177	7/6/2003	Bons Pond				
Orange	204	7/6/2003	Bons Pond				
Orange	212	7/6/2003	Bons Pond				
Orange	207	7/6/2003	Bons Pond				
Orange	208	7/6/2003	Bons Pond				

**Appendix 2, Arctic grayling marked in Bons Pond, continued**

Orange	226	7/6/2003	Bons Pond				
Orange	220	7/6/2003	Bons Pond				
Orange	225	7/6/2003	Bons Pond				
	64	7/6/2003	Bons Pond				
	79	7/6/2003	Bons Pond				
	84	7/6/2003	Bons Pond				
	85	7/6/2003	Bons Pond				
	86	7/6/2003	Bons Pond				
	67	7/6/2003	Bons Pond				
	91	7/6/2003	Bons Pond				
	81	7/6/2003	Bons Pond				
	95	7/6/2003	Bons Pond				
	92	7/6/2003	Bons Pond				
	169	7/6/2003	Bons Pond				
	192	7/6/2003	Bons Pond				
	172	7/6/2003	Bons Pond				
	170	7/6/2003	Bons Pond				
	170	7/6/2003	Bons Pond				
	141	7/6/2003	Bons Pond				
	197	7/6/2003	Bons Pond				
Orange	216	7/6/2003	Bons Pond				
Orange	203	7/6/2003	Bons Pond				
Orange	220	7/6/2003	Bons Pond				
Orange	209	7/6/2003	Bons Pond				
Orange	203	7/6/2003	Bons Pond				
Orange	216	7/6/2003	Bons Pond				
Orange	222	7/6/2003	Bons Pond				
Orange	200	7/6/2003	Bons Pond				
Orange	224	7/6/2003	Bons Pond				
Orange	210	7/6/2003	Bons Pond		8/12/2003	Bons Pond	219
Orange	218	7/6/2003	Bons Pond				
Orange	207	7/6/2003	Bons Pond				
Orange	224	7/6/2003	Bons Pond				
Orange	204	7/6/2003	Bons Pond				
Orange	206	7/6/2003	Bons Pond				
Orange	202	7/6/2003	Bons Pond				
Orange	228	7/6/2003	Bons Pond				
Orange	233	7/6/2003	Bons Pond				

**Appendix 2, Arctic grayling marked in Bons Pond, continued**

Orange	205	7/6/2003	Bons Pond				
Orange	211	7/6/2003	Bons Pond				
	186	7/6/2003	Bons Pond				
	187	7/6/2003	Bons Pond				
	192	7/6/2003	Bons Pond				
	173	7/6/2003	Bons Pond				
Orange	202	7/6/2003	Bons Pond				
Orange	211	7/6/2003	Bons Pond				
Orange	206	7/6/2003	Bons Pond				
Orange	214	7/6/2003	Bons Pond				
Orange	223	7/6/2003	Bons Pond				
Orange	204	7/6/2003	Bons Pond				
Orange	219	7/6/2003	Bons Pond				
Orange	212	7/6/2003	Bons Pond				
Orange	222	7/6/2003	Bons Pond				
Orange	228	7/6/2003	Bons Pond				
Orange	200	7/6/2003	Bons Pond				
Orange	208	7/6/2003	Bons Pond		8/12/2003	Bons Pond	219
Orange	212	7/6/2003	Bons Pond				
Orange	205	7/6/2003	Bons Pond				
Orange	200	7/6/2003	Bons Pond				
Orange	220	7/6/2003	Bons Pond				
Orange	210	7/6/2003	Bons Pond				
Orange	201	7/6/2003	Bons Pond				
Orange	200	7/6/2003	Bons Pond				
Orange	294	7/6/2003	Bons Pond				
	184	7/6/2003	Bons Pond				
	182	7/6/2003	Bons Pond				
	190	7/6/2003	Bons Pond				
	193	7/6/2003	Bons Pond				
	197	7/6/2003	Bons Pond				
Orange	200	7/6/2003	Bons Pond				
Orange	280	7/6/2003	Bons Pond				
Orange	251	7/6/2003	Bons Pond				
Orange	215	7/6/2003	Bons Pond				
Orange	233	7/6/2003	Bons Pond				
Orange	210	7/6/2003	Bons Pond				
Orange	225	7/6/2003	Bons Pond				

**Appendix 2, Arctic grayling marked in Bons Pond, continued**

Orange	216	7/6/2003	Bons Pond				
Orange	206	7/6/2003	Bons Pond		8/12/2003	Bons Pond	216
Orange	209	7/6/2003	Bons Pond				
Orange	218	7/6/2003	Bons Pond				
Orange	230	7/6/2003	Bons Pond				
Orange	212	7/6/2003	Bons Pond				
Orange	240	7/6/2003	Bons Pond				
Orange	225	7/6/2003	Bons Pond				
Orange	220	7/6/2003	Bons Pond				
Orange	208	7/6/2003	Bons Pond				
Orange	208	7/6/2003	Bons Pond				
Orange	225	7/6/2003	Bons Pond				
Orange	209	7/6/2003	Bons Pond				
	198	7/6/2003	Bons Pond				
	195	7/6/2003	Bons Pond				
	171	7/6/2003	Bons Pond				
Orange	339	7/6/2003	Below Dam				
Orange	304	7/6/2003	Below Dam				
Orange	236	7/6/2003	Below Dam				
Orange	240	7/6/2003	Below Dam				
Orange	262	7/6/2003	Below Dam				
Orange	277	7/6/2003	Below Dam				
Orange	227	7/6/2003	Below Dam				
Orange	315	7/6/2003	Below Dam				
Orange	231	7/6/2003	Below Dam				
Orange	218	7/6/2003	Below Dam				
Orange	295	7/6/2003	Below Dam		8/7/2003	Below Dam	300
Orange	208	7/6/2003	Below Dam				
Orange	222	7/6/2003	Below Dam				
Orange	295	7/6/2003	Below Dam				
Orange	263	7/6/2003	Below Dam				
Orange	219	7/6/2003	Below Dam				
Orange	200	7/6/2003	Bons Pond				
Orange	214	7/6/2003	Bons Pond				
Orange	215	7/6/2003	Bons Pond				
Orange	209	7/6/2003	Bons Pond				
Orange	207	7/6/2003	Bons Pond				
Orange	216	7/6/2003	Bons Pond				

**Appendix 2, Arctic grayling marked in Bons Pond, continued**

Orange	221		7/6/2003	Bons Pond				
Orange	229		7/6/2003	Bons Pond				
Orange	205		7/6/2003	Bons Pond				
Orange	213		7/6/2003	Bons Pond				
	178		7/6/2003	Bons Pond				
	187		7/6/2003	Bons Pond				
	195		7/6/2003	Bons Pond				
	193		7/6/2003	Bons Pond				
	190		7/6/2003	Bons Pond				
	160		7/6/2003	Bons Pond				
	176		7/6/2003	Bons Pond				
	190		7/6/2003	Bons Pond				
	190		7/6/2003	Bons Pond				
	130		7/7/2003	Bons Pond				
	92		7/7/2003	Bons Pond				
	92		7/7/2003	Bons Pond				
	68		7/7/2003	Bons Pond				
	88		7/7/2003	Bons Pond				
	72		7/7/2003	Bons Pond				
	75		7/7/2003	Bons Pond				
	187		7/7/2003	Bons Pond				
	191		7/7/2003	Bons Pond				
	195		7/7/2003	Bons Pond				
	195		7/7/2003	Bons Pond				
	175		7/7/2003	Bons Pond				
	194		7/7/2003	Bons Pond				
	194		7/7/2003	Bons Pond				
	195		7/7/2003	Bons Pond				
	175		7/7/2003	Bons Pond				
	182		7/7/2003	Bons Pond				
	187		7/7/2003	Bons Pond				
	190		7/7/2003	Bons Pond				
	185		7/7/2003	Bons Pond				
	191		7/7/2003	Bons Pond				
	196		7/7/2003	Bons Pond				
	190		7/7/2003	Bons Pond				
	196		7/7/2003	Bons Pond				
	195		7/7/2003	Bons Pond				



**Appendix 2, Arctic grayling marked in Bons Pond, continued**

Orange	209	7/7/2003	Bons Pond				
Orange	222	7/7/2003	Bons Pond				
Orange	211	7/7/2003	Bons Pond		8/10/2003	Bons Pond	218
Orange	208	7/7/2003	Bons Pond				
Orange	207	7/7/2003	Bons Pond				
Orange	224	7/7/2003	Bons Pond				
Orange	206	7/7/2003	Bons Pond				
Orange	205	7/7/2003	Bons Pond				
Orange	201	7/7/2003	Bons Pond				
Orange	202	7/7/2003	Bons Pond		8/11/2003	Bons Pond	212
Orange	211	7/7/2003	Bons Pond				
Orange	222	7/7/2003	Bons Pond				
Orange	214	7/7/2003	Bons Pond				
Orange	225	7/7/2003	Bons Pond		8/12/2003	Bons Pond	227
Orange	267	7/7/2003	Bons Pond				
Orange	223	7/7/2003	Bons Pond				
Orange	263	7/7/2003	Bons Pond				
Orange	210	7/7/2003	Bons Pond				
Orange	219	7/7/2003	Bons Pond				
Orange	206	7/7/2003	Bons Pond				
Orange	218	7/7/2003	Bons Pond				
Orange	205	7/7/2003	Bons Pond				
Orange	202	7/7/2003	Bons Pond				
Orange	221	7/7/2003	Bons Pond				
Orange	225	7/7/2003	Bons Pond				
Orange	200	7/7/2003	Bons Pond				
Orange	201	7/7/2003	Bons Pond				
Orange	219	7/7/2003	Bons Pond				
Orange	211	7/7/2003	Bons Pond				
Orange	223	7/7/2003	Bons Pond				
Orange	232	7/7/2003	Bons Pond				
Orange	217	7/7/2003	Bons Pond				
Orange	209	7/7/2003	Bons Pond				
Orange	229	7/7/2003	Bons Pond				
Orange	209	7/7/2003	Bons Pond				
Orange	211	7/7/2003	Bons Pond		8/12/2003	Bons Pond	8/5/1900
Orange	213	7/7/2003	Bons Pond				
Orange	226	7/7/2003	Bons Pond				

**Appendix 2, Arctic grayling marked in Bons Pond, continued**

Orange	224	7/7/2003	Bons Pond				
Orange	201	7/7/2003	Bons Pond				
Orange	265	7/8/2003	Bons Pond				
Orange	260	7/8/2003	Bons Pond				
Orange	265	7/8/2003	Bons Pond				
Orange	195	7/8/2003	Bons Pond				
Orange	266	7/8/2003	Bons Pond				
Orange	226	7/8/2003	Bons Pond				
Orange	214	7/8/2003	Bons Pond				
Orange	220	7/8/2003	Bons Pond				
Orange	210	7/8/2003	Bons Pond				
Orange	217	7/8/2003	Bons Pond				
Orange	211	7/8/2003	Bons Pond				
Orange	203	7/8/2003	Bons Pond				
Orange	222	7/8/2003	Bons Pond				
Orange	220	7/8/2003	Bons Pond				
Orange	218	7/8/2003	Bons Pond				
Orange	211	7/8/2003	Bons Pond	8/11/2003	Bons Pond	222	
	191	7/8/2003	Bons Pond				
	196	7/8/2003	Bons Pond				
	170	7/8/2003	Bons Pond				
	190	7/8/2003	Bons Pond				
	191	7/8/2003	Bons Pond				
	90	7/8/2003	Bons Pond				
	193	7/8/2003	Bons Pond				
	163	7/8/2003	Bons Pond				
Orange	223	7/9/2003	Bons Pond				
Orange	217	7/9/2003	Bons Pond				
Orange	208	7/9/2003	Bons Pond				
Orange	205	7/9/2003	Bons Pond	8/12/2003	Bons Pond	210	
Orange	214	7/9/2003	Bons Pond	8/12/2003	Bons Pond	222	
Orange	245	7/9/2003	Bons Pond				
Orange	215	7/9/2003	Bons Pond				
Orange	202	7/9/2003	Bons Pond				
Orange	211	7/9/2003	Bons Pond				
Orange	228	7/9/2003	Bons Pond				
Orange	204	7/9/2003	Bons Pond				
Orange	230	7/9/2003	Bons Pond				

**Appendix 2, Arctic grayling marked in Bons Pond, concluded**

Orange	200		7/9/2003	Bons Pond				
Orange	221		7/9/2003	Bons Pond				
	191		7/9/2003	Bons Pond				
	194		7/9/2003	Bons Pond				
	196		7/9/2003	Bons Pond				
	188		7/9/2003	Bons Pond				
	172		7/9/2003	Bons Pond				
	187		7/9/2003	Bons Pond				
	174		7/9/2003	Bons Pond				
	158		7/9/2003	Bons Pond				
	177		7/9/2003	Bons Pond				
	196		7/9/2003	Bons Pond				
Orange	206		7/9/2003	Bons Pond				
Orange	205		7/9/2003	Bons Pond				
Orange	210		7/9/2003	Bons Pond				
Orange	212		7/9/2003	Bons Pond				
Orange	216		7/9/2003	Bons Pond				
Orange	214		7/9/2003	Bons Pond				
Orange	217		7/9/2003	Bons Pond				
Orange	217		7/9/2003	Bons Pond				
Orange	217		7/9/2003	Bons Pond				
Orange	217		7/9/2003	Bons Pond				
Orange	210		7/9/2003	Bons Pond				
Orange	208		7/9/2003	Bons Pond				
Orange	200		7/9/2003	Bons Pond				
	196		7/9/2003	Bons Pond				
	193		7/9/2003	Bons Pond				
	165		7/9/2003	Bons Pond				