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Adult Chinook Salmon Abundance Monitoring in the Secesh River and Lake Creek, Idaho

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Adult Chinook Salmon Abundance Monitoring in the Secesh River and Lake Creek, Idaho, 2000

2000 Annual Report

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ABSTRACT

Underwater time-lapse video technology has been used to monitor adult spring and summer chinook salmon (*Oncorhynchus tshawytscha*) escapement into the Secesh River and Lake Creek, Idaho, since 1998. Underwater time-lapse videography is a passive methodology that does not trap or handle this Endangered Species Act listed species. Secesh River chinook salmon represent a wild spawning aggregate that has not been directly supplemented with hatchery fish. The Secesh River is also a control population under the Idaho Salmon Supplementation study.

This project has demonstrated the successful application of underwater video adult salmon abundance monitoring technology in Lake Creek in 1998 and 1999. Emphasis of the project in 2000 was to determine if the temporary fish counting station could be installed early enough to successfully estimate adult spring and summer chinook salmon abundance in the Secesh River (a larger stream). Snow pack in the drainage was 93% of the average during the winter of 1999/2000, providing an opportunity to test the temporary count station structure.

The temporary fish counting station was not the appropriate technology to determine adult salmon spawner abundance in the Secesh River. Due to its temporary nature it could not be installed early enough, due to high stream discharge, to capture the first upstream migrating salmon. A more permanent structure used with underwater video, or other technology needs to be utilized for accurate salmon escapement monitoring in the Secesh River.

A minimum of 813 adult chinook salmon spawners migrated upstream past the Secesh River fish counting station to spawning areas in the Secesh River drainage. Of these fish, more than 324 migrated upstream into Lake Creek. The first upstream migrating adult chinook salmon passed the Secesh River and Lake Creek sites prior to operation of the fish counting stations on June 22. This was 17 and 19 days earlier than the first fish arrival at Lake Creek in 1998 and 1999 respectively. Peak net upstream adult movement at the Secesh River site occurred June 28 and at the Lake Creek site on June 27. Peak of total movement was August 16 at Secesh River and August 7 at Lake Creek. The last fish passed through the Lake Creek fish counting station on August 31 and on September 8 at the Secesh River site.

Migrating salmon in the Secesh River and Lake Creek exhibited two behaviorally distinct segments of fish movement. The first segment of movement was characterized, mainly, by upstream movement only. The second segment consisted of upstream and downstream movement with very little net upstream movement. The fish counting stations did not impede salmon movements, nor was spawning displaced downstream. Fish moved freely upstream and downstream through the fish counting structures. Fish movement was greatest between the period of 5:00 p. m. and 4:00 a. m. There appeared to be a segment of "nomadic" males that moved into and out of the spawning area, apparently seeking other mates to spawn with. The downstream movement of salmon allowed by this fish counting station design may be an important factor

affecting reproductive success as male salmon seek other females to spawn with. Traditional weirs operated for broodstock collection do not allow for downstream movement of adults.

This methodology has the potential to provide more consistent and accurate salmon spawner abundance information than single-pass and multiple-pass spawning ground surveys. Accurate adult abundance would allow managers to determine if recovery actions were benefiting these salmon spawning aggregates and if recovery goals were being met.

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ACKNOWLEDGMENTS

The Bonneville Power Administration provided funding for this project. We would like to thank Nez Perce Department of Fisheries Resources Management personnel Mitch Daniel, Rob Hill, Larry Thorngren, Jason Vogel and Toby Tabor for project operations and structure placement. Rick Orme helped with tape editing and graphics. We thank Dr. Alfred Caudle, University of Georgia, College of Veterinary Medicine, for providing ultrasound equipment for field testing and for instructing us in its use. Jeff Cronce furnished the map of the Secesh River drainage. We thank the U.S. Forest Service for the use of Chinook Campground facilities to station our crew and trailer for the duration of the project. We also appreciate the Nez Perce Tribe for administration of this project.

INTRODUCTION

Salmon recovery within the Columbia River basin has become a focal point in the Pacific Northwest. Congress directed an independent scientific review of the Northwest Power Planning Council's (NWPPC) Fish and Wildlife Program activities because earlier programs were criticized as being a list of separate unrelated measures without any underlying scientific foundation (Independent Scientific Group 1993, Williams et al. 1998**)**. Large amounts of time, effort and funding have been spent to improve fish passage conditions, augment flows, enhance and restore habitat, constrain harvest and use hatchery supplementation to increase salmon populations. Despite these efforts, salmon populations have continued to decline. The National Marine Fisheries Service has issued a Biological Opinion for the operation of the federal Columbia River power system (NMFS 2000) that attempts to define criteria/population levels that would ensure continued existence of critical fish stocks. Recovery abundance levels are defined in terms of numbers of naturally spawning adult salmon returning to spawning areas. Therefore, accurate determination of adult salmon spawner abundance is of utmost importance to fisheries managers. Within the South Fork Salmon River, Secesh River spring and summer chinook salmon (*Oncorhynchus tshawytscha*) represent a wild salmon spawning aggregate. An analysis of Secesh River chinook salmon annual redd count data from 1957 to 1995 described a population trend in significant decline ($p<0.01$) (Kucera and Blenden 1999). The Secesh River is currently used as a control system for the Idaho Salmon Supplementation studies (Bowles and Leitzinger 1991).

Spring and summer chinook salmon in the entire Snake River basin, including the Secesh River, are listed as threatened under the Endangered Species Act (ESA) (NMFS 1992). The Biological Opinion for operation of the federal Columbia River power system (NMFS 2000) recommended that accurate assessment of spawner escapement of listed Evolutionary Significant Units (ESU) are required for determining the characteristics, viability, recovery status, and delisting of ESU's under ESA. NMFS (2000) further defined the degree to which species-level biological requirements must be met: "At the species level, NMFS considers that the biological requirements for survival, with an adequate potential for recovery, are met when there is a high likelihood that the species population will remain above critical escapement thresholds over a sufficiently long period of time. The particular thresholds, recovery levels, and time periods must be selected depending upon the characteristics and circumstances of each salmon species under consultation (NMFS 2000)". The recovery metric for listed ESUs is the likelihood that the 8-year geometric mean abundance of natural spawners in a population will be equal to or greater than an identified recovery abundance level (NMFS 2000).

The NMFS recommended characterizing populations by abundance/productivity, diversity (viability), spatial structure, and habitat capacity (NMFS 2000), most of which rely on some quantitative measure of adult abundance. Adult abundance determination is also a necessary component of proposed short-term stock performance measures that focus on life history stages (NMFS 2000). The Validation Monitoring Panel (Botkin et al. 2000) provided a science-based analysis for monitoring of salmon for conservation plans. The panel also identified the need for accurate adult salmon abundance information in relation to conservation and restoration plans.

Determination of adult spawner abundance information is a critical aspect of a viable population management strategy (Foose et al. 1995, Botkin et al. 2000), which is recognized within the scientific community and in recovery planning efforts (NMFS 2000). Currently, there is no quantitative information available to determine spawner abundance of spring and summer chinook salmon in tributary streams of the Snake River basin. Therefore, we cannot measure the effectiveness of conservation actions for a threatened species (Botkin et al. 2000). Quantifying adult salmon spawner abundance will provide a direct measurement of benefits of the Northwest Power Planning Council's Fish and Wildlife Program projects (funded by BPA) and efforts of recovery alternatives.

Traditional chinook salmon redd count surveys conducted in Idaho since the mid 1950's have relied upon one-time counts at the peak of spawning as an index of relative abundance over time (trend) (Elms-Cockrum 1999). Recent surveys on some streams have used multiple ground counts of spawning activities for more accurate assessment of salmon redds (Kucera 1987, Cowley and Kucera 1989, Kucera and Banach 1991, Kucera and Blenden 1994, Kucera and Blenden 1999). Expansion of redd counts to spawner numbers are influenced by measurement error and uncertainty of assumptions regarding estimates of fish per redd, relative numbers in surveyed and unsurveyed areas, prespawning mortality rates, age composition, and hatchery fish composition (Beamesderfer et al. 1997). Neither of these provides accurate spawner numbers.

Existing adult weirs are another potential source of adult spawner abundance information. The primary purpose of permanent and temporary adult weirs is for hatchery broodstock collection. Adult broodstock collection weirs are not sited for monitoring adult spawner abundance in streams. They most often provide either a minimum spawner estimate or a mark recapture spawner estimate derived from marked fish carcass recovery from spawning grounds. These estimates are also affected by measurement error and uncertainty of assumptions. Better methods and techniques are required.

This investigation began in 1991 with planning and conceptual engineering design of an adult fish counting facility on the lower Secesh River (Fish Management Consultants 1991) funded through the Pacific Salmon Commission. Listing of the species under the Endangered Species Act in 1992, and concerns with a permanent facility and handling of fish prompted the search for a site where temporary facilities could be used. Preliminary design work followed in 1994 (River Masters Engineering 1994). The Nez Perce Tribe has worked cooperatively with the Idaho Department of Fish and Game (IDFG) and the U.S. Forest Service (USFS) in the planning and developmental stages of this project.

New technology is available that may improve the accuracy of salmon spawner escapement estimates. We installed and test operated a temporary fish counting station on private land in the Secesh River, in 1997 (Faurot and Kucera 1999), to evaluate the use of underwater time-lapse video technology to determine abundance and timing of adult escapement into wild spring and summer chinook salmon production areas. Time-lapse video has been used before, primarily to enumerate adults at fish counting/viewing windows at hydroelectric projects (Hatch et al. 1994a, 1994b). In some cases, cameras have been submerged in fish ladders to evaluate fish passage (USFWS, unpublished data). Limited studies have used cameras underwater in a natural setting.

Holubetz and Leth (1996) experimentally operated a similar natural stream, remote video recorder system on Running Creek, in the headwaters of the Selway River.

In this study, a temporary structure that allowed both upstream and downstream fish movement was placed in the stream below the major spawning areas. An underwater video camera mounted to the structure photographed adult salmon as they migrated upstream. As adult salmon migrated upstream through the counting chambers, a photograph of them was taken via the underwater video camera. The structures allowed both upstream and downstream fish movement. Fish were not trapped, handled or held in any manner. In 1998, the fish counting station on the Secesh River was moved 1,000 meters downstream from the 1997 site to a better location on U. S. Forest Service land to include more spawning area. A second fish counting station was installed in 1998, on Lake Creek, a headwater tributary of the Secesh River (Faurot et al. 2000). Lake Creek is a smaller stream, is easier to work in, and is assumed to be a separate spawning aggregate of chinook salmon. Both fish counting stations were operated in 1999. Information collected from this project will allow comparison to redd count survey data to assess if redd count information provides reliable indices of adult salmon escapement.

The goal of this project is to accurately assess the spring and summer chinook salmon spawning migration in the Secesh River and Lake Creek drainages. This is a goal of the Nez Perce Tribe for all anadromous waters within their ceded territory. The goal emphasizes collection of accurate spawner abundance information. Presently, an index of relative abundance is estimated from index area or intensive redd count data in the Secesh River and Lake Creek.

The objectives of the study were to:

1) Accurately determine adult spring and summer chinook salmon spawner abundance in the Secesh River and Lake Creek on an annual basis.
2) Determine the timing of adult spring and summer chinook salmon spawning migration into the Secesh River and Lake Creek drainages.
3) Determine the accuracy of redd count methodology compared to the underwater video escapement enumeration technique.

DESCRIPTION OF PROJECT AREA

The Secesh River subwatershed, in west central Idaho, covers about 688 square km. The Secesh River is formed at the junction of Summit and Lake creeks, and traverses 45 km to the southeast where it flows into the main stem South Fork Salmon River about two km downstream of the East Fork of the South Fork of the Salmon River (Figure 1). Headwaters of Lake Creek are in the mountains above Burgdorf at an elevation of 2,417 m. Lake Creek drains an area of approximately 90 square km, is 25 km in length and is approximately 15 m wide at the fish counting station. Elevation drops to 1,838 m where Lake Creek joins Summit Creek to form the Secesh River. Elevation of the Secesh River then drops to 1,110 m where it flows into the South Fork Salmon River. Channel gradients range from less than one percent along Lake Creek and the upper Secesh Meadows to over ten percent in canyon sections. Average gradient in the vicinity of the fish counting stations was 0.5 percent. The Secesh River fish counting station was located 30 km upstream from the South Fork Salmon River at the U. S. Forest Service's Chinook Campground. The Lake Creek fish counting station was located 45 km upstream from the South

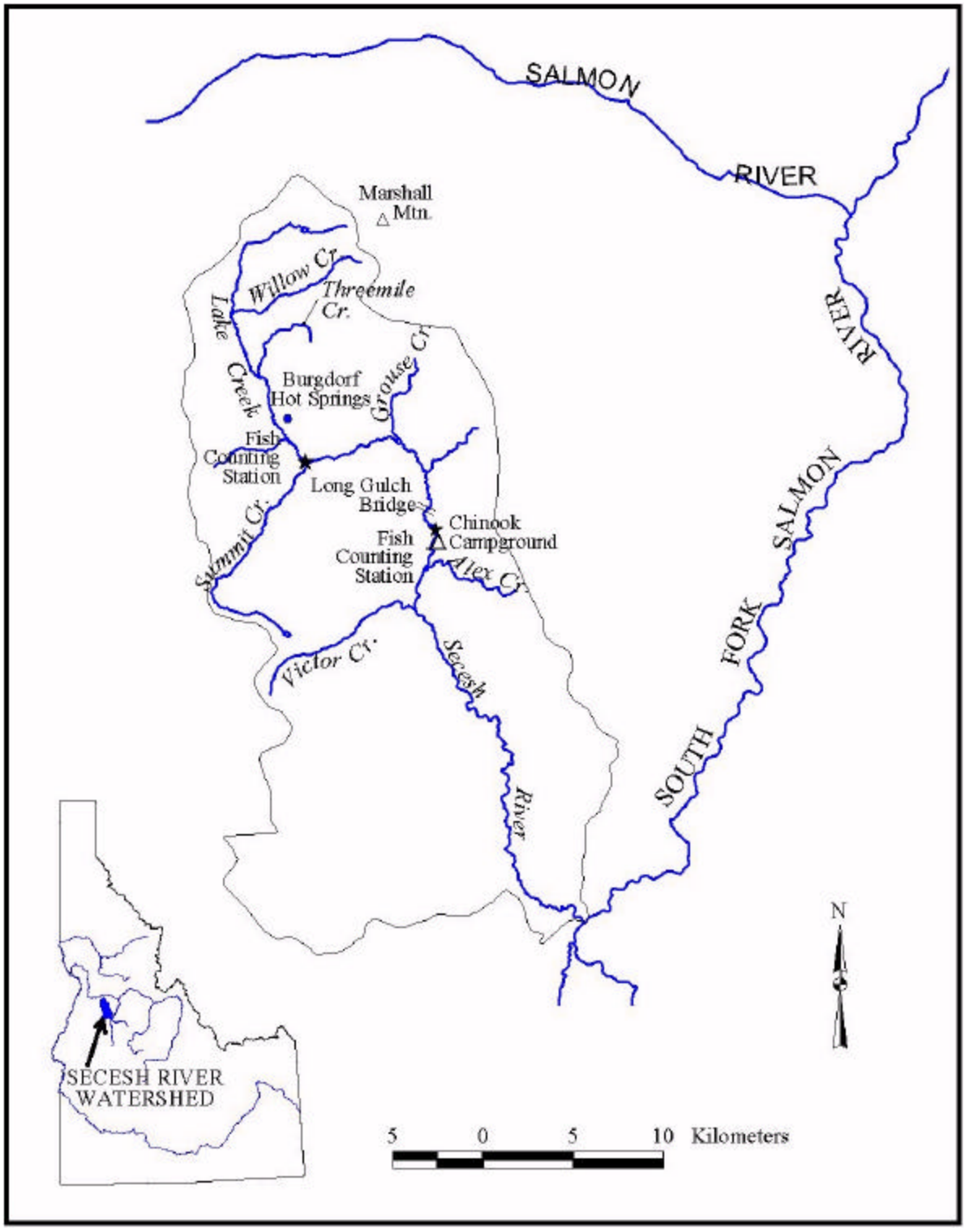

Figure 1. Map of the Secesh River drainage and locations of the fish counting stations (*denotes fish counting station).

Fork Salmon River and 100 m upstream from the mouth of Lake Creek. Chinook salmon and steelhead trout are present in the Secesh River drainage along with cutthroat (*O. clarki lewisi*), bull (S*alvelinus confluentus*), brook (*S. fontinalis*) and rainbow (*O. mykiss*), trout, mountain whitefish (*Prosopium williamsoni*), longnose dace (*Rhinichhys cataractae*) and sculpin (*Cottus sp.*). There was minimal chinook salmon spawning habitat from the mouth upstream 27.5 km to the upper end of the canyon area. About 2.5 km of limited spawning habitat was available from the upper end of the canyon, upstream to the fish counting station. The major chinook salmon spawning area was located upstream of the fish counting station in Secesh Meadows.

Spawning habitat was available in lower Grouse and Summit creeks. A mixture of good and scattered spawning habitat existed in Lake Creek from Burgdorf Meadows upstream to Willow Creek. Additional spawning area existed upstream of Willow Creek. The Nez Perce Tribe has conducted annual chinook salmon multiple ground count surveys in the Secesh River and Lake Creek since 1987 (Kucera and Blenden 1999, Walters et al. 2000).

METHODS AND MATERIALS

TIMING AND ABUNDANCE

Equipment

This project involves an ESA listed species that has a population trend in long-term decline. It was important to allow these fish to migrate and spawn without harassment. Underwater video used a passive, non-invasive system that allowed complete freedom of upstream and downstream movement of fish. Fish were not trapped, handled or held at any time. Primary system components were the temporary structure and the video equipment. The structure included tripod supported upstream and downstream picket guide fences and a counting chamber. The structures were shaped like two "V"s connected at their apexes by the counting chamber (Figure 2). The two downstream wings were angled at 30 to 45 degrees to the bank to orient and direct upstream migrating fish into the 1.22 m long counting chamber, where their picture was taken. The two upstream wings did the same for downstream moving fish. The counting chamber was located in the thalweg, which was believed to be the preferred migration route. The entrance to the counting chamber was 0.86 m wide by, 0.71 m high. Upstream and downstream migrating adults were able to move freely into and through the counting chambers. The structures were installed as soon as possible after the peak of spring runoff to have the fish counting chambers in place prior to the arrival of the first upstream migrating chinook salmon. Due to the heavy debris load during spring runoff, structures could not be installed prior to snowmelt.

Photographs of individual salmon (Figures 3, 4 and 5) were recorded in time-lapse (2 frames/sec) on 8 mm videotape. Artificial red light was provided by two arrays of 36 LEDs (Light Emitting Diodes). Red light was used to eliminate possible fish avoidance of white light. All electrically powered equipment used 12 Volt DC power because of the remote location of the sites. Batteries were charged by solar panels. Faurot and Kucera (1999) and Faurot et al (2000) gave a complete description of the fish counting station.

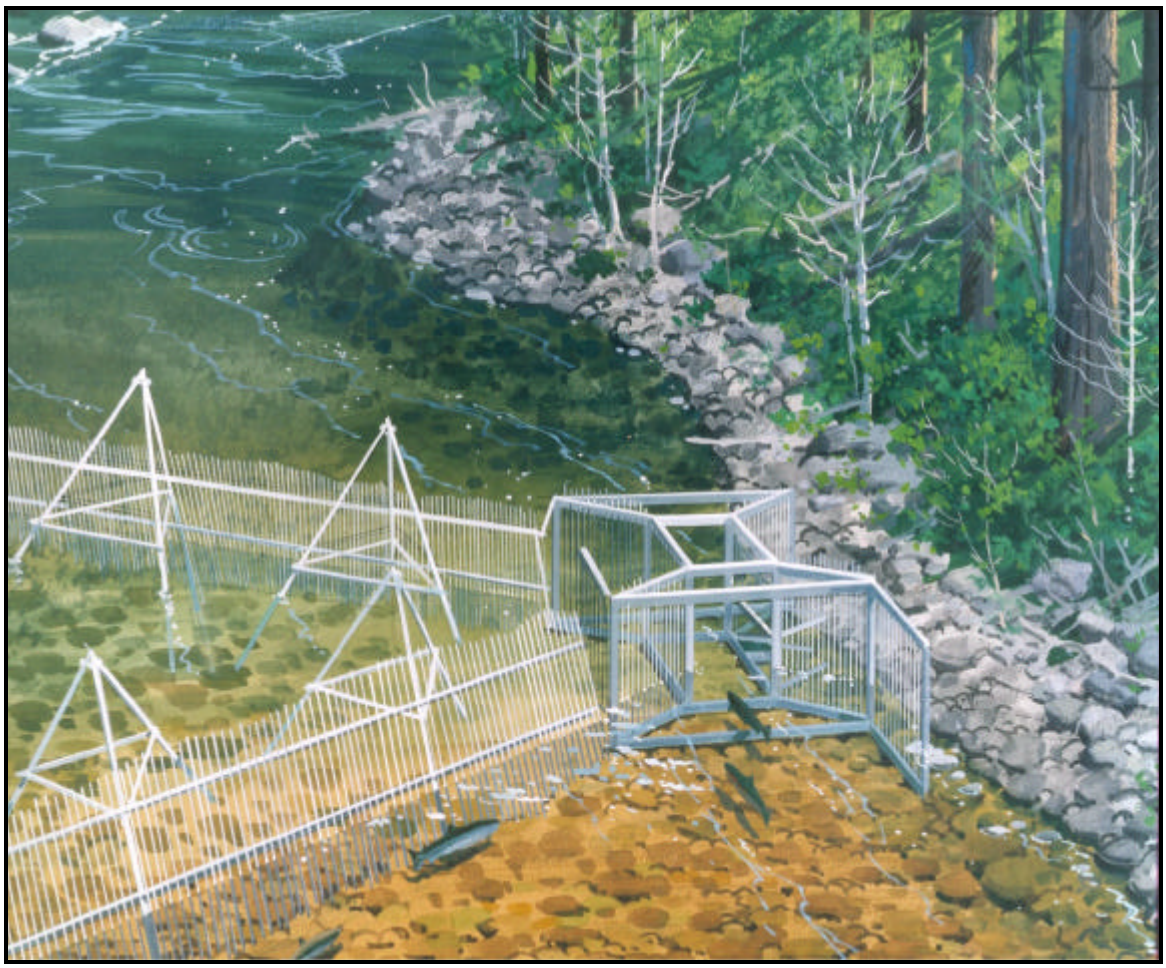

Figure 2. Artist's rendition of the video escapement monitoring fish counting station.

Procedure

Personnel replaced videotapes and batteries as necessary to ensure efficient project operation. Completed videotapes were taken to the office where they were manually reviewed for proper operation and data obtained. The computerized editing system for video monitoring of fish passage described in Hatch et el. (1998) did not work for our system in 2000. Videotapes were capable of recording about 32 hours of information, but were changed daily. Data obtained was date of passage, time of day of passage, direction of passage, length, gender, and other marks such as fin clips or unique scars to identify individual fish. Fish sex could not be determined positively. Where results by sex were obvious, such as male upstream and downstream movements during the second segment of the run, findings were presented by sex. VHS master tape of just the actual fish passages was produced for further review and verification of data. The date-time stamp on the videotape provided date and time of passage. Direction of fish movement was noted as upstream or downstream. Determination of escapement during the course of the upstream migration was simply a matter of adding to the total as a fish passed upstream, and subtracting as a fish moved downstream. Downstream movement in chinook salmon has been documented in the Kenai River (Bosch and Burwen 1999), Deep Creek (Iverson

1996), Yukon River (Ransom et al. 1998) and Lake Creek and the Secesh River (Faurot and Kucera 1999, Faurot et al. 2000, Faurot and Kucera 2001 and this report) and at dams (fallback) (Bjornn et al.1999 and 2000). This downstream movement of fish has a tendency to complicate abundance estimates. To minimize the impact of fish wandering while searching for a suitable spawning location, fish counting stations were placed downstream of as much spawning area as feasible. In 1998, we were able to follow multiple passages of uniquely marked individual fish (Faurot and Kucera 1999). Most of these were males, one of which passed through the fish counting station 46 times. One extreme exception was a male that tried to defend a redd directly upstream and a redd immediately downstream of the fish counting station, who passed through the fish counting station 239 times. Fortunately, most of the up and down male movements occurred after spawning had commenced and escapement numbers were fairly stable. It is acknowledged that some males die and drift downstream through the fish counting station while dying or moving to another spawning area. Review of our 1997 through 2000 data showed that very few fish passing the fish counting station after spawning had commenced were females. The effect on redd numbers and production would be minimal. To determine the final number

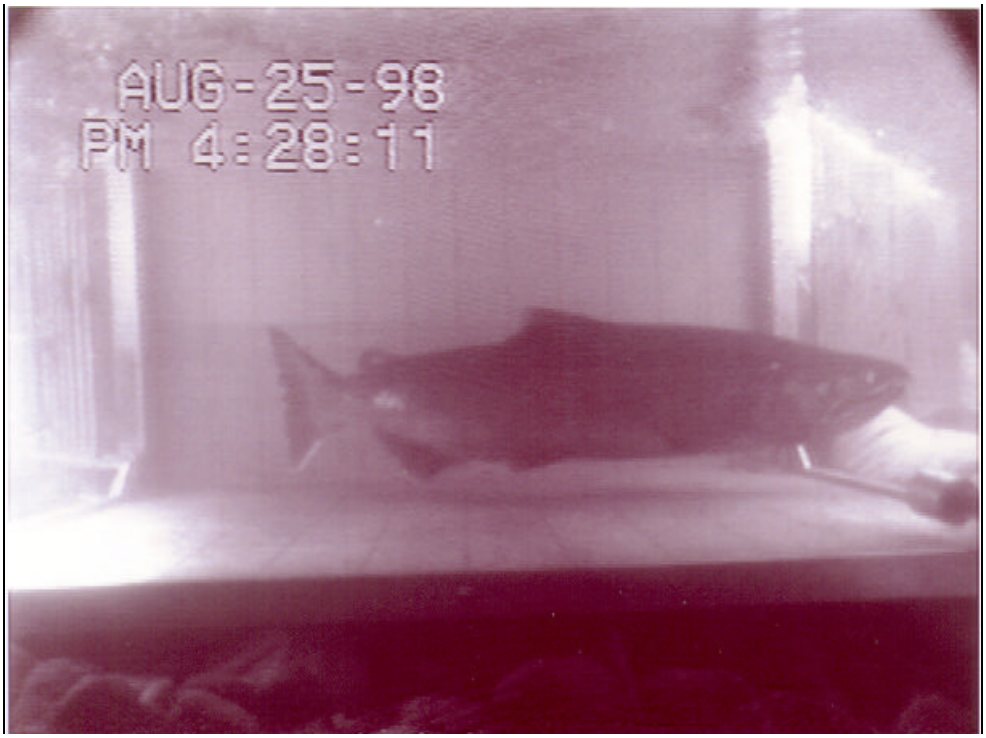

Figure 3. Underwater video photograph of a male chinook salmon migrating through the fish counting chamber in daylight.

Figure 4. Underwater video photograph of chinook salmon migrating through the fish counting chamber at night.

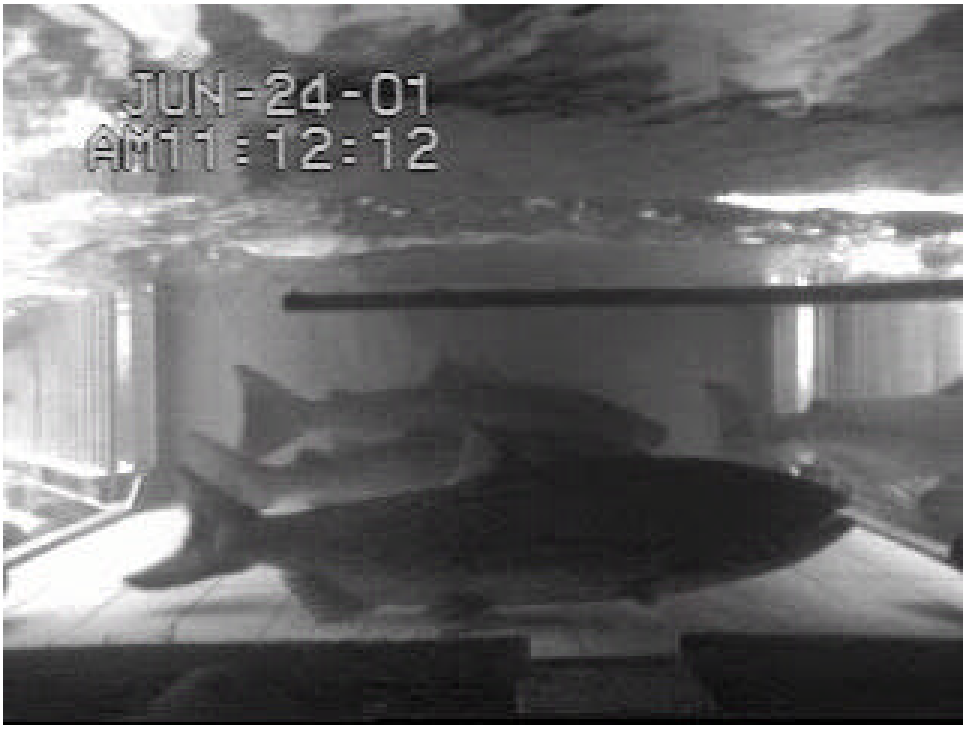

Figure 5. Underwater video photograph of multiple (4) chinook salmon migrating through the fish counting chamber. The salmon in the foreground is missing the adipose fin.

of fish that contributed to production it was assumed males could regenerate sperm, and males that dropped out of the system after the peak of spawning, whether they were dying or attempting to locate another female, were assumed to have contributed to production. They could contribute to production in both Lake Creek and the Secesh River. Very few females moved downstream. Females upstream of the fish counting station during the time of spawning were all assumed to have contributed to spawning. Thus, the greatest number of fish above the fish counting station after spawning commenced were considered to have contributed to spawning.

Visual characteristics were used for sex determination. The primary characteristic was the shape of the head and the development of the male kype. Male chinook salmon appear to have a tendency to a larger adipose fin. This was sometimes used to aid gender determination. There was concern that sex could not be determined positively, especially earlier in the migration. As the spawning migration progressed, male kypes became more pronounced and differentiation was easier. A panel of four fish biologists reviewed fish gender from 1998 passage data and separately determined sex. While results of the majority (3:1) were close to the initial sex ratio determined by the project leader and results of carcass surveys, unanimous determinations (4:0) of the biologists were not satisfactory for inclusion in this report except for generalities. Such as, later in the season when sex characteristics were more developed, it could be determined that most of the upstream and downstream movements were male.

Species identification was fairly simple. All adult chinook salmon were 50 cm or larger. The only other fish to reach that size were whitefish, which were not a problem to differentiate from videotape images, and bull trout. Bull trout and jack chinook salmon were differentiated by the longer anal fin and flattened body form of bull trout. Secondary identification characteristics were the squarer tail and erect dorsal fin of bull trout. Movements of bull trout 40 cm and larger were noted. Fish species identification of fish smaller than 40 cm was difficult and their movements were not recorded.

Length of fish was determined by measuring the fish against a 10 cm grid system that was marked on the bottom and back plates of the counting chamber. Fin clips were noted. Ventral fin clips from South Fork Salmon River hatchery smolt releases were hard to detect, especially those on the side away from the camera. Incomplete adipose fin clips had been observed in previous years. For these reasons fin clips were noted to document straying, but in 2000 no attempt was made to quantify the amount of straying. Hourly water temperature data was collected at the Idaho Salmon Supplementation study site about a half mile upstream.

Corrections for fish missed during equipment downtime and periods of high turbidity were made by determining the average hourly fish passage rate, during the hours of the outage, two days prior to and after the outage. The average hourly number of fish passing was then applied to the interrupted portion of the coverage to adjust for this equipment downtime. In 1998 and 1999, downtime was corrected using a daily average. This change in procedure could affect a very minor difference.

Since underwater videotapes of fish passage had to be examined manually, we investigated the potential for "reader bias" in the counting of upstream and downstream adult salmon movements. A reader bias correction was made for fish passages that were missed during the initial viewing of the videotape. This was the first year a reader bias has been applied. A sample of 10 % of the Lake Creek videotapes, across the run, was read by two additional observers. Observers recorded date, time and direction for all adult salmon. The combination of results of the three observers provided a complete passage listing, which was then compared to the initial viewing to provide a "reader bias" or percent efficiency of the initial viewer. Since upstream and downstream fish passages may not have been "missed" equally, this bias factor was applied to net upstream movement. The reader bias correction was then added to the total adult salmon escapement.

MONITORING AND EVALUATION

It was acknowledged that some uncertainty existed in terms of migration impedance and/or spawner displacement due to a fish counting station. Hevlin and Rainey (1993) reported several instances where fish weirs had impeded fish movements and/or displaced spawning downstream. We felt a Monitoring and Evaluation Plan was a necessity when dealing with an ESA listed species. Therefore, a Monitoring and Evaluation (M&E) plan was developed to provide safeguards against any potential migration impedance. The plan contained three elements; 1) criteria for determining when facility impacts were significant to salmon, 2) guidelines for corrective actions, and 3) a plan implementation schedule. The primary impacts associated with a fish counting station were prevention or impediment of adult salmon movement (both upstream and downstream) past the station and displacement of spawning to downstream locations. Impeding movement was evaluated by daily visual bank and daily snorkel observations upstream and downstream of the fish counting station. Particular attention was paid to salmon holding areas downstream of the counting station. If 10 or more adult salmon were observed in the same area for three days while no fish passed through the counting chamber, then movement was impeded. Displacement of spawning downstream was evaluated by comparing the percent of redds downstream of the counting chamber to the percent of redds downstream of the fish counting station site between 1992 and 1996 (five years prior to project implementation). Corrective action would be taken if the criteria for determining if the fish counting station was impacting salmon migration were met. This action would consist of removing all of the pickets that make up the fish guiding fences for a period of one week. Snorkel and visual bank observations would be continued in an effort to observe salmon movement. If salmon movement occurred during the one-week period, than the pickets would be replaced. If after picket replacement salmon movement occurred normally, the counting station would again be operated with routine monitoring efforts in place. If after reinstallation monitoring again revealed that salmon passage was again impeded, the counting station would be removed and redesigned. The plan was to be followed for the first three years of operation; provided that it was determined that salmon movement was not impacted. If salmon movements were impacted during the first three years of operation, the M&E plan would be followed in subsequent years until salmon movement was not impacted for two subsequent years. The period of operation was to include a year of high spring runoff and a year of low spring runoff.

During the first three years of operation, which included the 1998 low flow year (72 % of normal) and the 1999 high flow year (148 % of normal), it was determined that the fish counting

stations did not impede fish movement or displace spawning downstream (the percent of redds downstream of the fish counting station was within the 1992 to 1996 range). In 2000, snorkel and visual bank observations were conducted on a less frequent, random basis, or if fish were observed or heard jumping at the pickets. Videotapes also provided passage information such as an increased number of aborted entries into the counting chambers.

DESIGN AND PLACEMENT CRITERIA

Operation of the fish counting station structure was compared to water depth and velocity criteria recommended by Hevlin and Rainey (1993). These criteria were examined relative to safety and structural integrity of the facility given the hydrologic conditions at the site. If the recommended criteria could not be safely met the facility could be removed and installed when the criteria were achievable. More importantly, the structure could determine what the criteria actually should be for the specific installation site. In 1999, the fish counting stations were installed without all the guide fence pickets and video equipment prior to spring runoff. This was done in an effort to ensure the fish counting station was operating prior to the arrival of the first salmon. The structure with stood the increased river flows, but a heavy debris load accumulated on the basic structure. Conditions in the water at that time were unsafe for personnel to try to remove the debris. Both fish counting stations were dislodged. As discharge receded, the structures were recovered and reinstalled. It appears that the fish counting stations can be safely installed and maintained at an approximate river discharge of 200 cfs in Lake Creek and 400 cfs in the Secesh River sites. Once the structures were in place, project personnel monitored and maintained the fish counting stations on a daily basis. Debris build-up on the guide fences was removed daily or as necessary.

RESULTS AND DISCUSSION

MIGRATION TIMING AND ABUNDANCE

The wildfires of 2000 had an impact on this year's fish counting station operations. The Burgdorf Junction wildfire started on July 14, within a mile of the Lake Creek site. Firefighting efforts occurred in the vicinity for the duration of the field season. The first two weeks of the fire, smoke was thick, especially in the morning. The fire burned down to the road between the Lake Creek and Secesh River sites, and the road was closed on several occasions. Traffic was heavy at times and restricted at other times. The main fire camp was located on the Burgdorf Road that follows Lake Creek. Camps for National Guard and U. S. army personnel were in the Secesh Meadows area. Many of the fire personnel had never seen salmon before and were eager to see and learn about the fish migration and spawning. Many visitors came to the fish counting stations to observe our operations. U. S. Forest Service resource advisors instituted measures to prevent damage to the stream and harassment of spawning fish. Even with this, there were reports of people digging for gold in the streambed and others bothering spawning fish.

Equipment failure was experienced, on occasion, during the 2000 field season. When recorder heads were clogged by soot and ash, the videotapes would not record. Thunderstorm induced runoff of ash and sediment caused excessive turbidity. Even though videotapes continued to record, nothing was visible on the tapes. Deposited ash and sediment hampered redd counts by reducing water clarity and covering redds with soot, ash and sediment.

One task within the original project was to estimate the number of hatchery strays into the system. All hatchery-reared chinook salmon released in the South Fork Salmon River were adipose fin-clipped. The requirement to enumerate strays was dropped in 1998 (Faurot et al. 2000) due to the difficulty distinguishing between poor/partial fin clips and small or naturally damaged fins. Adipose fin clips were observed on adult fish passing through both fish counting stations in 2000, indicating that some straying did occur.

Lake Creek

Fish that enter the Secesh River are believed to belong to two spawning aggregates, Secesh River and Lake Creek. Lake Creek fish must pass through the Secesh River counting station to get to Lake Creek. Lake Creek fish are believed to enter first, move upstream to colder headwater areas, and spawn earlier (NPT unpublished data). Observations from this project in 1998 and 1999 have indicated males may spawn with both Lake Creek and Secesh River spawning aggregates. This was not as noticeable in 2000. The Secesh River/Lake Creek spawning aggregate has been in a long-term decline (Elms-Cockrum 1999).

Installation of the Secesh River fish counting station was given the highest priority in 2000 in an effort to photograph the first salmon migrating into the system. The Lake Creek fish counting station was installed immediately after the Secesh River installation, on June 22, 2000 and operations began immediately. The Lake Creek facility could possibly have been installed earlier. This was the same start date of operations as 1998, when the first fish was not observed until July 9. However, in 2000, adult chinook salmon were observed the first day of operation, indicating the first upstream migrating fish was not sampled. The Lake Creek fish counting station estimated a minimum net escapement of 324 spring and summer chinook salmon that contributed to spawning in Lake Creek in 2000 (Figure 6). This minimum escapement was four to five times greater than the 1998 and 1999 escapements (Figure 6). The run size was much larger, as also evidenced by the greater number of fish passages through the fish counting chamber (221 in 1998, 418 in 1999 and 1,294 in 2000) and the greater number of redds counted. Idaho Department of Fish and Game (IDFG) index redd counts (165) were the highest since 1960 (185) (Elms-Cockrum 1999). The adult spring and summer chinook salmon count over Lower Granite Dam in 2000 was 37,755 fish. Of these, 8,895 were estimate to be wild fish. Escapement into Lake Creek represented approximately 3.5% of the estimated wild run over Lower Granite Dam. The percentage of the Lower Granite Dam count that went to Lake Creek has increased each of the three years of the study (Table 2).

Table 1. Summary of major chinook salmon escapement dates in Lake Creek, 1998, 1999 and 2000.

Activity	1998	1999	2000
Installation	22 June	9 July	22 June
First fish	8 July	11 July	Prior to 22 June
Peak of net upstream movement	18 July (6)	20 July (14)	27 June (27)
Median net upstream passage	18 July	21 July	Undetermined
Peak of activity	6 August (29)	19 August (34)	7 August (113)
Last fish	26 August	3 September	31 August
Operation ceased	15 September	13 September	12 September
Number of fish passages	221	418	1294
Escapement	52	67	>324

About 27 salmon or 9.2% of the spawner escapement in 2000 were jacks. A correction to the number of videotaped jacks was applied to account for downtime and reader bias. The 20 jacks that migrated in 1999 represented a larger proportion (30%) of the total spawning population. In 1998 there were no jacks. The final number of spawning chinook salmon used for comparisons to redd counts in Lake Creek in 2000 was 324.

Table 2. Percent of wild spring and summer chinook salmon counted over Lower Granite Dam that migrated into Lake Creek and the Secesh River in 1998, 1999 and 2000.

Lower Granite Dam Wild Fish Estimated Count		Lake Creek		Secesh River*	
Year	Number	%	(Number)	%	(Number)
1998	8,426	0.6	(52)	>1.8	(>152)
1999	3,276	2.0	(67)	>4.4	(>144)
2000	8,895	>3.5	(>324)	>8.7	(>813)

*This includes those fish that migrated into Lake Creek.

The first chinook was recorded on June 22, shortly after operation commenced (Table 1). Peak video count for the season occurred on August 23, when a minimum of 324 chinook

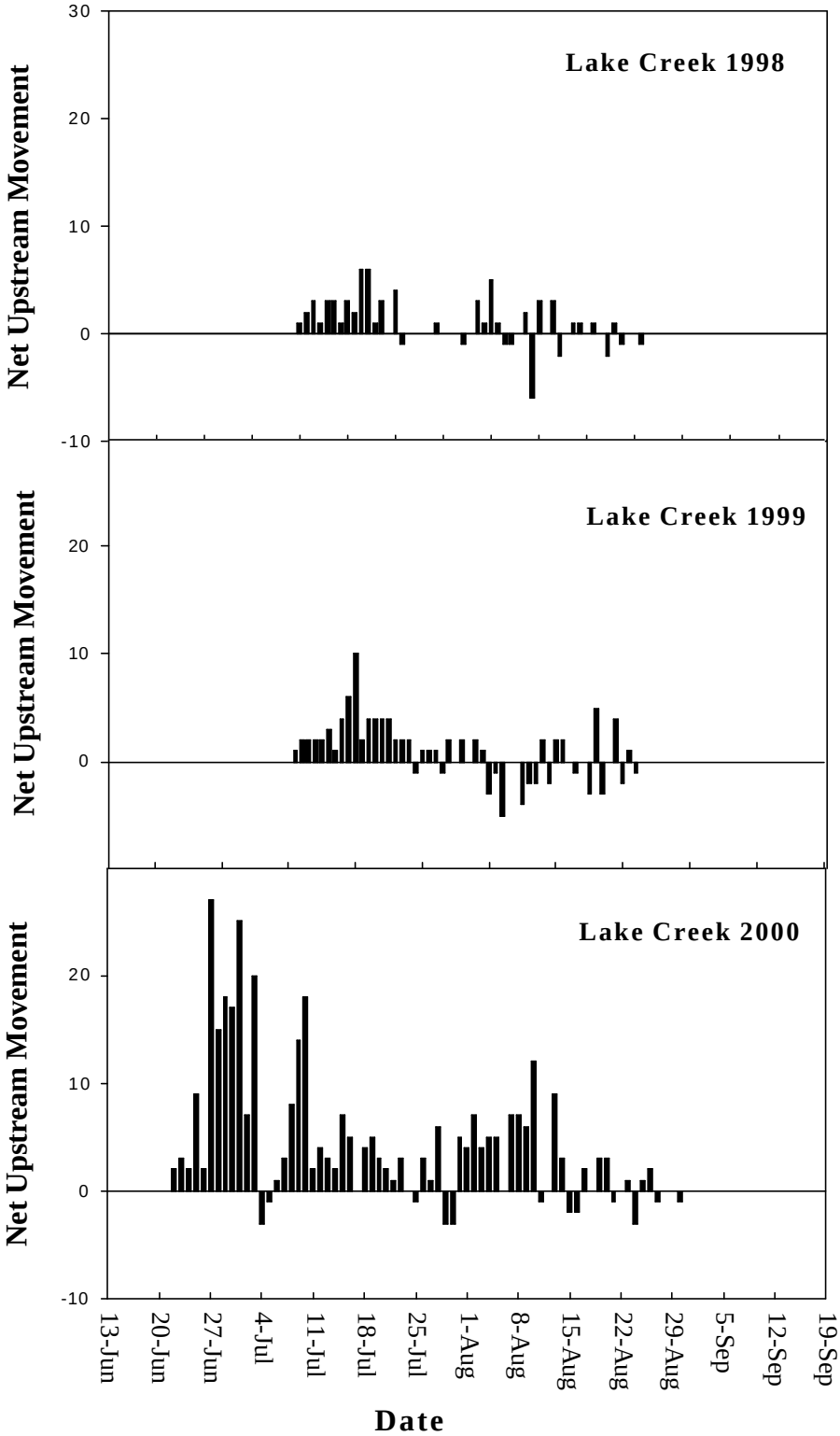

Figure 6. Net upstream spawning migration of adult spring and summer chinook salmon migrating through the Lake Creek fish counting station in 1998, 1999 and 2000.

salmon had been observed (293 videotaped with a 17 (±20.17, 95% C.I.) fish correction for down time and a plus 14 fish correction for reader bias) (Appendix Table A-1, C-2). Spawning was well underway by that date. Height of active spawning was approximately the third week of August (Lockhart NPT, unpublished data). The fish count above the fish counting station decreased slightly at the end of the season as dying fish and nomadic males passed downstream out of the area. The last fish passed downstream on August 31. When operations ended on September 12, a minimum of 319 fish remained above the fish counting station. Video recording was 92.2% operational while the fish counting station was in place. This included 23 hours on June 25/26 during the peak of the upstream migration. Corrections for operational down time are included in fish count totals.

Snow pack in the spring of 2000 was close to normal (93% of normal). However, the 2000 chinook salmon spawning migration was larger and at least two weeks earlier than 1998 and 1999. Even though we do not know how early the first fish arrived, the first fish photographed in 2000 was more than 17 days earlier than in 1998 and 19 days earlier than in 1999. The reason for this earlier migration in Lake Creek was unknown. Snow pack in the springs of 1998 (72% of normal) and 1999 (148% of normal) represented extreme high and low runoff years. The first fish arrived on July 9 in 1998 and July 11 in 1999. Arrival of the first fish, the median passage and the peak of net upstream movement, in 1998 and 1999, were all within two to three days of each other (Table 1). Data from those two years of operation seemed to indicate the run timing of the Lake Creek spawning aggregate was fairly rigid. Salmon run timing in 2000 demonstrated that variation in adult arrival timing in tributary streams of at least two weeks should be expected.

Peak of net upstream migration occurred June 27, when there was a net upstream movement of 27 fish. This compared to the peak of 6 fish on July 18, 1998 and 9 fish on July 20, 1999. Peak of net upstream movement in 2000 occurred before the date of the first fish arrival in 1998 and 1999. Net escapement increased rapidly the first two weeks of sampling, continued slowly over the next two weeks, and unlike the previous two years, continued to increase and remained high until operations ceased (Figure 7).

The pattern of migration into Lake Creek in 2000 was different than 1998 and 1999 (Figure 6). In Lake Creek and the Secesh River in 1998 and 1999 there appeared to be two behaviorally distinct segments. Rapid upstream migratory movement of both sexes characterized the first segment, and the second segment was associated with spawning activity, with increased upstream and downstream movement of males (Figure 8). This behavior (increased total activity) is illustrated in Figure 8 (Appendix Table C-1). In 2000, net escapement continued to increase slightly during the second segment (Figure 8) and the change from the first to the second segment was not as obvious (Figure 8). This change from migratory behavior to movement related to spawning did not occur at the same time from year to year, nor did it occur simultaneously on Lake Creek and the Secesh River. The break at Lake Creek was about a week earlier than on the Secesh River in 1998 and 1999, and about the same time in 2000. Increased male upstream and downstream movement activity during the second segment of the run was still very apparent. This change from migratory behavior to movement related to spawning did not occur at the same time from year to year, nor did it occur simultaneously on Lake Creek and the Secesh River. The break at Lake Creek was about a week earlier than on the Secesh River in

1998 and 1999, and about the same time in 2000. Increased male upstream and downstream movement activity during the second segment of the run was still very apparent.

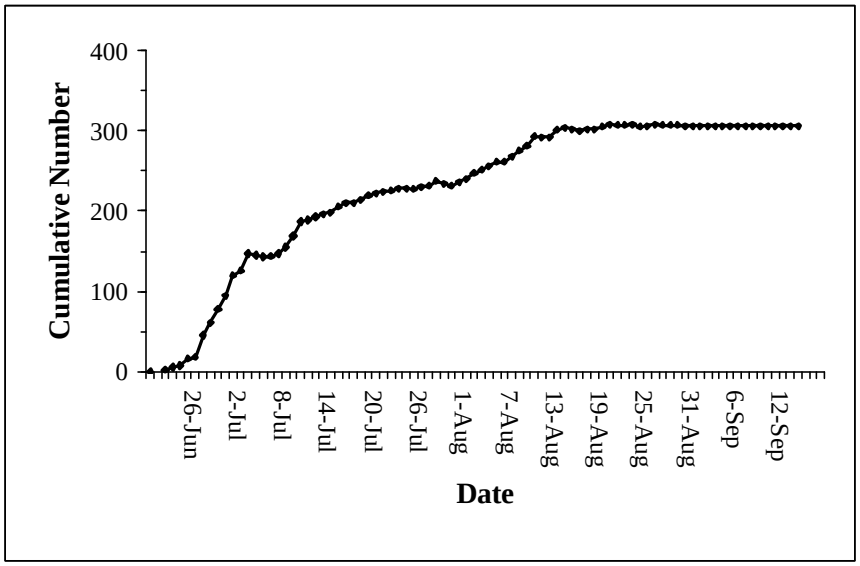

Figure 7. Cumulative observed adult spring and summer chinook salmon spawner escapement at the Lake Creek fish counting station in 2000.

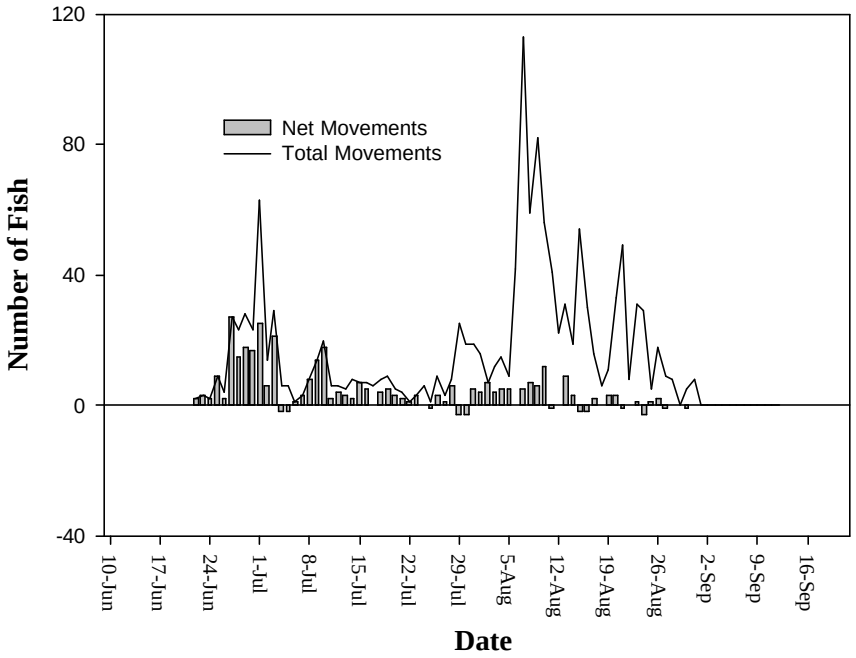

Figure 8. Daily net upstream and total movements of adult spring and summer chinook salmon through the Lake Creek fish counting station in 2000.

Secesh River

It was a high priority of the project to be operational at the Secesh River site in 2000 in time to photograph the entire spawning migration to determine whether the temporary weir/video methodology was a viable technique to estimate spawner abundance at this site. The first adult salmon passing the Secesh River site has not been photographed in any of the four years of operation. The first fish entering Lake Creek was photographed in 1998 and 1999, and by estimating travel time between the two sites, we felt the Secesh River fish counting station was operational very close to the first fish passage in 1998. In 1999, we had installed the Secesh River fish counting station prior to spring runoff in order to observe the first returning salmon. The winter of 1998/1999 experienced a higher than normal snow pack (143%). The temporary weir was dislodged by high water and heavy debris load. Snow pack in the area was slightly below normal during the winter of 1999/2000 (93% of normal). The fish counting station was installed and commenced operation, after the peak of spring runoff, on June 22, three weeks earlier than any prior year.

A minimum of 813 adult spring and summer chinook salmon migrated into the Secesh River in 2000 (Table 3). Ten fish passed the fish counting station the first 24 hours of operation indicating that the first upstream migrating fish was not photographed. The peak of observed net upstream migration occurred June 28, when there was a net upstream movement of 55 fish (Table 3). This is compared to the peak of 15 fish in 1998 and 1999, on July 18 and 19, respectively (Table 3). Peak net upstream count for the season of 813 occurred on August 29 and 31. The upstream spawning migration was completed at that time and spawning was well underway. Peak of movement activity was August 16, when there were 353 total movements (upstream and downstream) through the fish counting station (Table 3). This compared to August 27 in 1998 (55 fish) and August 17 in 1999 (34 fish). Although problems with stream access in 2000 hindered accurate determination of spawning times, it appeared to be similar to 1998 and 1999 (NPT unpublished data). The last fish passed through the fish counting station on September 8 and operations ceased September 15. Video recording was 94.8% operational while the fish counting station was in place. Downtime was spread throughout the migration. Corrections for operational down time are included in fish count totals.

The 2000 chinook salmon spawning migration was quite different from the 1998 and 1999 migrations. The 2000 spawning migration was earlier and larger than the previous two years, and escapement continued to increase throughout the migration, unlike 1998 and 1999 (Figure 9). The net spawner escapement in the Secesh River was greater than 813 adult chinook salmon (740 videotaped with a 37 (± 24.22, 95% C.I.)fish correction for down time and a +36 fish correction for reader bias) (Appendix Table B-1, C-2). The number of fish that migrated upstream before operations began was unknown. This minimum escapement was approximately five times greater than the 1998 and 1999 escapements. In 1998, we estimated a net spawning escapement of greater than 152 adult chinook salmon. No jacks were recorded. In 1999, we estimated an escapement of greater than 144 chinook salmon, including about 40 jacks. The salmon spawner migration in 2000 was much larger, as evidenced by the greater number of fish passages through the fish counting station (2,384) and the greater number of redds counted. Idaho Department of Fish and Game index redd counts (320) were the highest since 1960 (510) (Elms-Cockrum 1999).

Table 3. Summary of major chinook salmon escapement dates in the Secesh River, 1998, 1999 and 2000.

Activity	1998	1999	2000
Installation	10 July	15 July	22 June
First fish	Prior to 10 July	Prior to 15 July	Prior to 22 June
Peak of net upstream movement	18 July (15)	19 July (15)	28 June (55)
Median net upstream passage	Undetermined	Undetermined	Undetermined
Peak of activity	27 August (55)	17 August (34)	16 August (353)
Last fish	9 September	10 September	8 September
Operation ceased	18 September	18 September	15 September
Number of Fish Passages	578	837	2,384
Escapement	>152	>144	>813

The adult spring and summer chinook salmon count over Lower Granite Dam in 2000 was 37,755. Of these, 8,895 were estimated to be wild fish. Escapement into the Secesh River (greater than 813 wild chinook salmon) represented approximately 8.7% of the wild run over Lower Granite Dam (Table 2). The percentage of the Lower Granite Dam count that went to the Secesh River has increased each of the three years of the study (1998-2000) from 1.8% to 4.4% to 8.7% (Table 2). The cause of the relatively stronger Secesh River escapement was unknown. Of the greater than 813 total escapement in 2000, about 17% (137 fish) of the run was jacks. A correction to the number of videotaped jacks was applied to account for downtime and reader bias. The number of jacks migrating in 2000 (125) was greater than the number of jacks in 1999 (40), but represented a smaller percentage (17% versus 30%). This larger number of jacks should forecast a strong return of four-year old fish in 2001.

In 2000, unlike the previous two years, net upstream movement through the fish counting station increased during the entire migration (Figures 9 and 10). There were two distinct segments of adult salmon movement evident at the Secesh River site in 2000. Migratory movement, or rapid upstream movement of both sexes, characterized the first segment. The second segment, was associated with movement related to spawning, and was characterized by increased upstream and downstream movement, with little increase in escapement (Figure 11). An increase in upstream and downstream movement by males was very evident after August 8 (Appendix Table B-1). At the peak of movement activity on August 16, there were 353 movements through the fish counting station, but a net upstream movement of only 26 fish. That was 13.6 passages through the

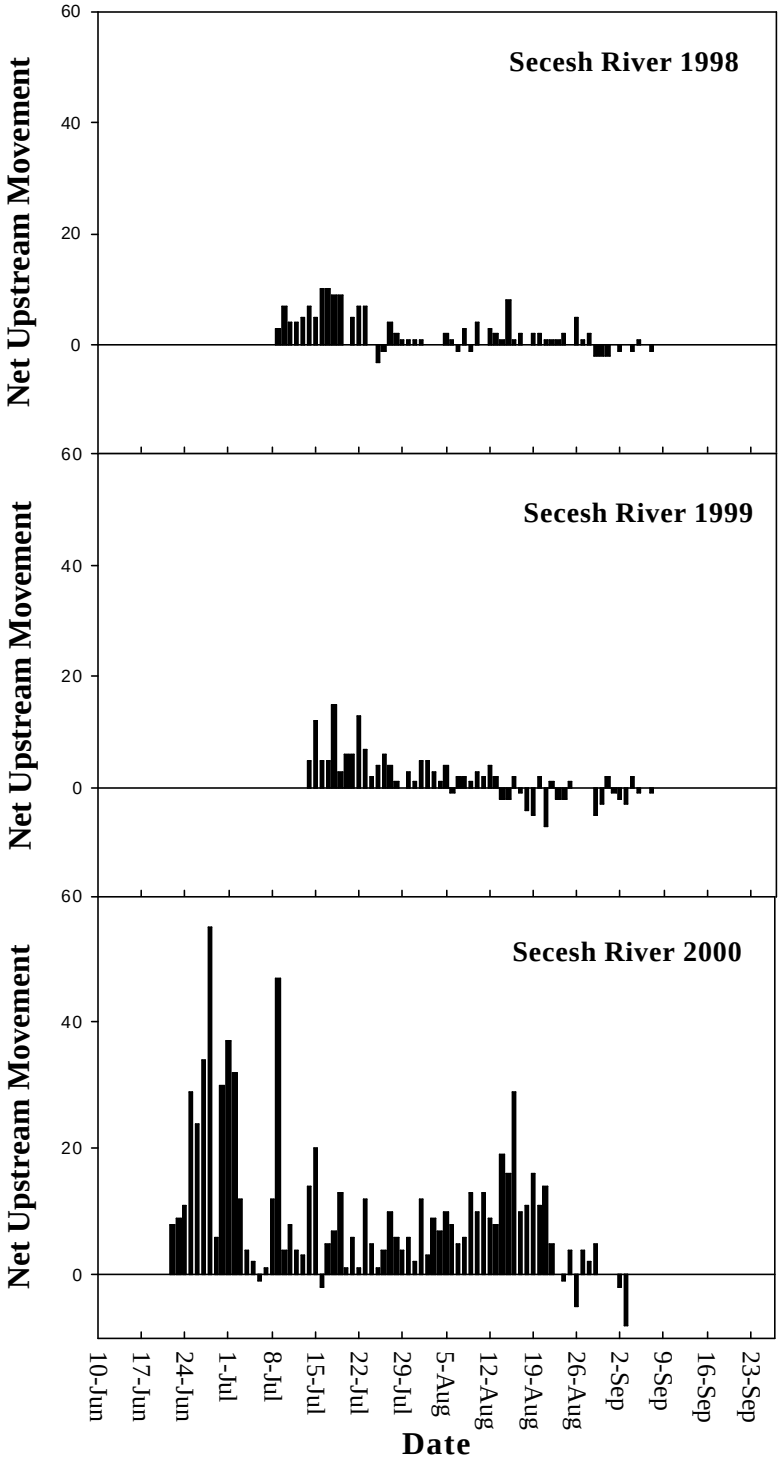

Figure 9. Minimum estimated net upstream spawning migration of adult spring and summer chinook salmon through the Secesh River fish counting station in 1998, 1999 and 2000.

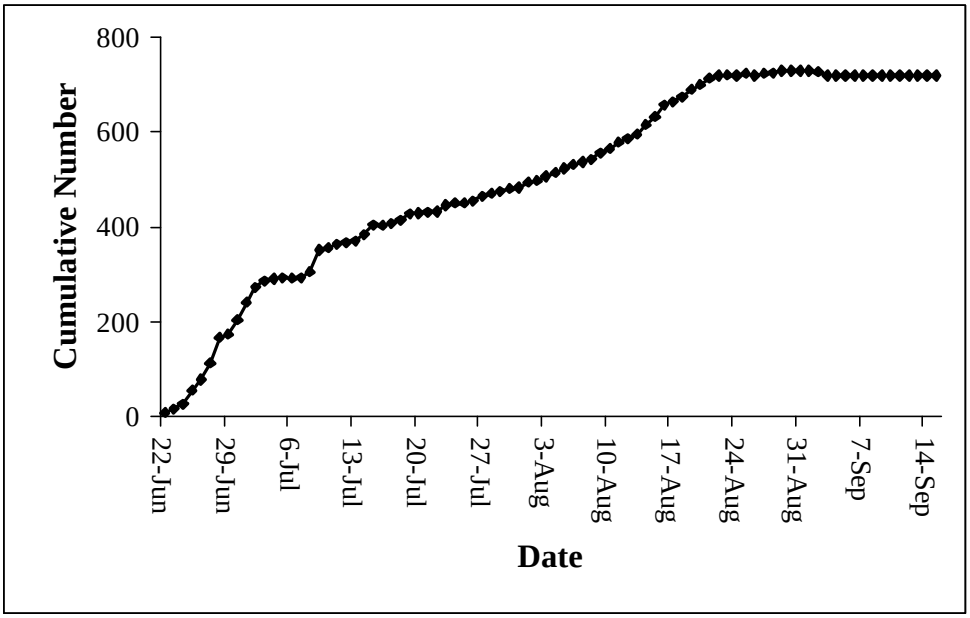

Figure 10. Cumulative adult spring and summer chinook salmon spawner escapement through the Secesh River fish counting station in 2000.

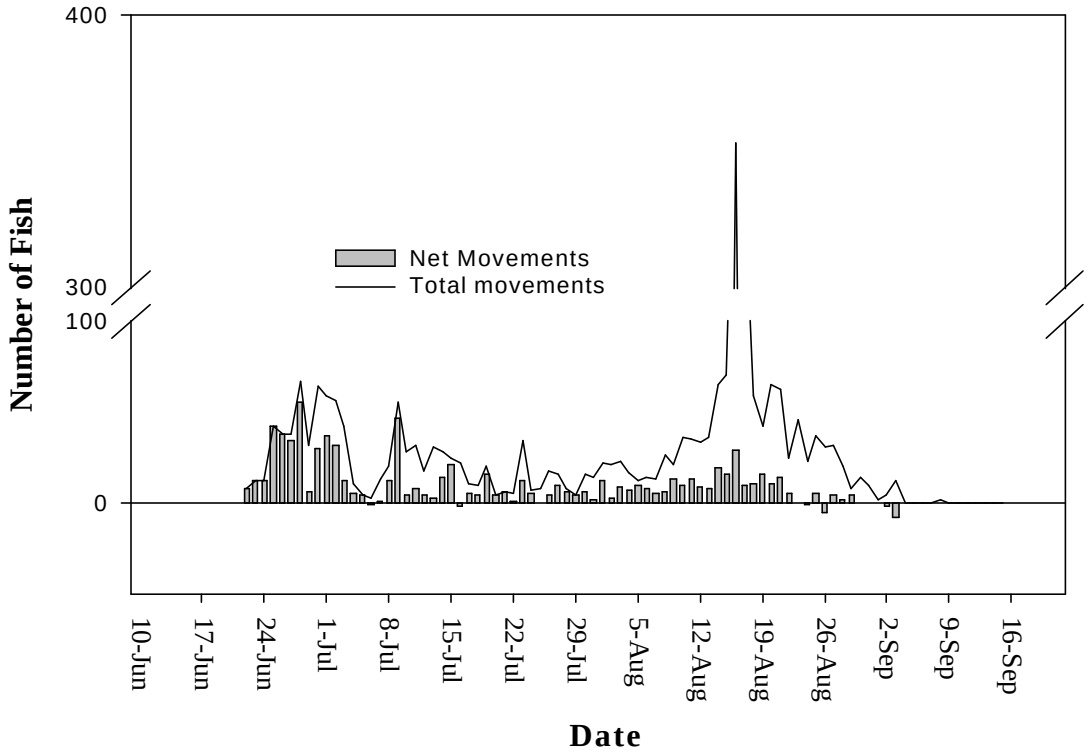

Figure 11. Daily net upstream and total movements of adult spring and summer chinook salmon through the Secesh River fish counting station in 2000.

counting chamber for each net upstream movement. Net spawner abundance continued to increase until dying fish drifted out of the system or nomadic males departed downstream looking for other mates from August 24 thru September 3. Overall, the spawner migration on the Secesh River in 2000 started before June 22, about two to three weeks earlier than the previous two years (Figure 9). The last recorded fish passage occurred on September 8. Fish counting station observations were concluded on September 15, with 766 chinook salmon remaining above the fish counting station. The break between the first and second segments of the run did not occur simultaneously on Lake Creek and the Secesh River; nor did it occur at the same time from year to year. In 1998 and 1999, total net escapement decreased during the second segment.

MOVEMENT

Adult salmon moved upstream and downstream, both day and night. Net upstream movement at the fish counting stations was simply a matter of adding upstream passages and subtracting downstream passages. As in previous years, the run consisted of two segments. Rapid upstream movement of both sexes, with little downstream movement, characterized the first segment. This behavior was associated with active upstream spawning migration. A lull in activity occurred between the two segments. The second segment was characterized by more upstream and downstream movement and was dominated by males. Although net upstream movement continued to increase during the second segment, fish behavior consisted more of seeking spawning sites and mates.

Diel Movement

Adult salmon diel movement information was obtained from the videotapes. Movements of adults through both fish counting stations occurred day and night. Activity (upstream plus downstream movements) at the Secesh River site was greatest between 11:00 p.m. and 5:00 a.m. and at Lake Creek from 4:00 p.m. to 3:00 a.m. (Figure 12, Appendix Tables A-2 and B-2). Males dominated movement, especially later in the season. Net upstream movement (upstream minus downstream) past the Secesh River site occurred at the highest rate between 11:00 p.m. and 3:00 a.m. Net upstream movement was low during daylight hours, with very little net movement occurring between 9:00 a.m. and 2:00 p.m. (Figure 13). Net upstream movement on Lake Creek was highest between 3:00 p.m. and 11:00 p.m. (Figure 13).

Fish counters at main stem Columbia River and lower Snake River dams have typically discontinued counting anadromous adults at night between 9:00 p.m. and 5:00 a.m because of low passage rates. Hatch et al. (1994a) monitored the migration of adult sockeye (*O. nerka*) and chinook salmon at the fish-viewing window at Tumwater Dam on the Wenatchee River in Washington using a time-lapse video recorder system. They found nighttime upstream migration past the dam (between 10:00 p.m. and 4:00 a.m.) to be from 6.7 to 16.2 percent of the daily passage. At Lower Granite Dam on the main stem Snake River, Hatch et al. (1994b) counted 6.4 percent of the fish migrating upstream at night. Calvin (1975) also found low rates of nighttime upstream migration movement at main stem Columbia River dams. The diel timing of spring and summer chinook salmon in this spawning tributary system was quite different than those

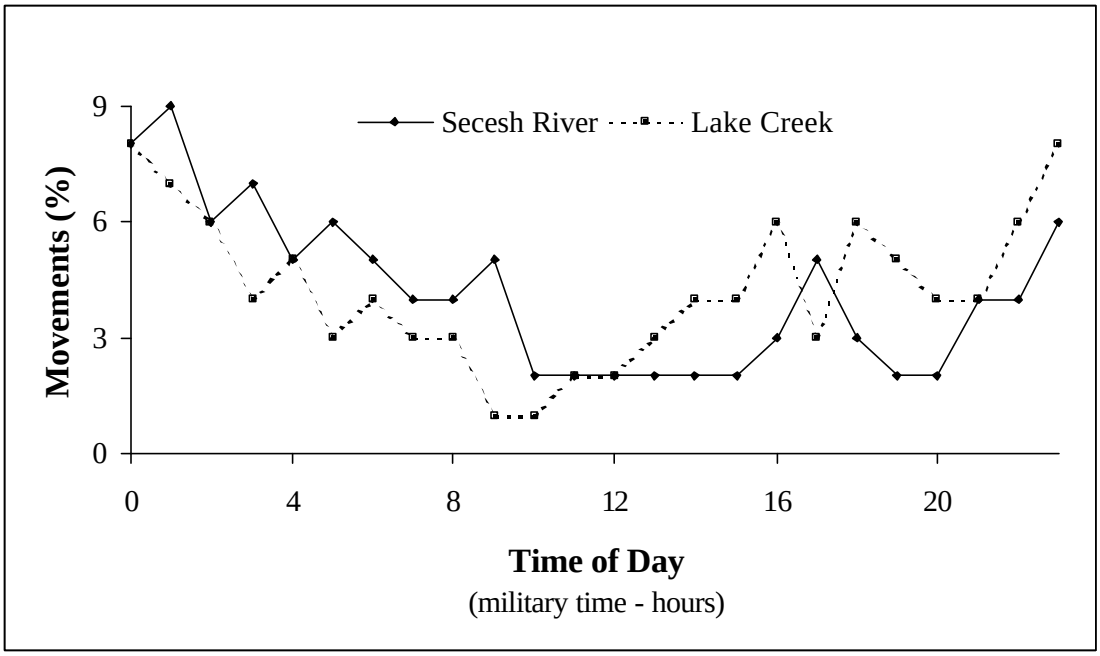

Figure 12. Diel timing of activity (upstream plus downstream movements) of adult spring and summer chinook salmon through the Lake Creek and Secesh River fish counting stations in 2000.

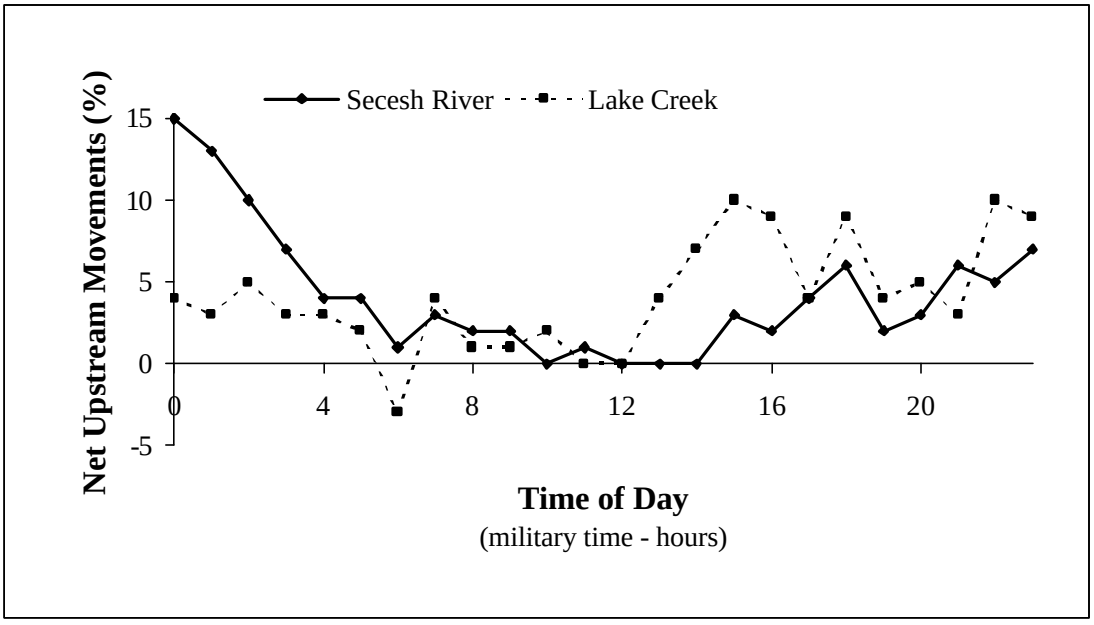

Figure 13. Diel timing of net upstream movement (upstream minus downstream) of adult spring and summer chinook salmon through the Lake Creek and Secesh River fish counting stations in 2000.

observed above. In 1998 to 2000, during this study, 37 – 71 % of the total movement activity and 34 – 86 % of the net upstream movement occurred between 10:00 p.m. and 4:00 a.m. It appears that in smaller rivers and streams closer to spawning areas, that movement activity occurred more during periods of darkness.

Upstream/Downstream Movement

The upstream and downstream movement observed at the fish counting stations in each year of operation was again observed in 2000. Higher escapement in 2000 produced much more activity at both the Lake Creek and Secesh River sites. There were a total of 1,265 passages past the Lake Creek fish counting station. On average there were 4.5 fish passages for every net upstream salmon movement over the entire spawning run. Once spawning had commenced (second segment) there were 21.2 movements for each net upstream migrating salmon. One distinctly marked individual male skewed the number for 2000. This male tried to defend two redds, one immediately upstream of the Lake Creek fish counting station and one immediately downstream. Videotapes recorded 239 passages by this one individual, including times when he was chasing and fighting with other males. The height of total fish movement activity at Lake Creek was from August 6 through 15, when an average of 48 adults moved upstream and downstream per day, with a one-day high of 113 movements on August 7 (Figure 8). The above-mentioned male that defended two redds also skewed these numbers. In 2000, as in 1998 and 1999, this upstream/downstream movement was mainly males (Appendix Table A-1). In 1998, there were 10.8 passages for each net upstream passage and, in 1999, there were 18.5 passages for each net downstream passage during the second segment of the run.

There were a total of 2,334 passages past the Secesh River fish counting station in 2000. This averaged to 3.2 passages for each of the 740 photographed adult salmon. Most of this passage (67%) was after spawning activity had begun (second segment). During the active spawning period there were 1,149 total movements (upstream and downstream) with a net upstream movement of 145 adult salmon. This averaged to 7.9 passages for each net upstream passage during the second segment of the run in 2000. The height of total fish movement activity in 2000 at the Secesh River was from August 14 to 21 (Figure 11), when an average of 109 adults moved upstream and downstream per day. This includes a one-day high of 353 movements on August 16. The average net movement during the height of total fish movement activity was 15 adult salmon upstream per day. In 2000, there was a net upstream movement of 119 salmon, including about 49 females, during the height of total fish movement activity. The second segment of the 1998 run averaged 13.8 passages for each net upstream passage. In 1999, escapement actually decreased during the second segment of the run, with 13.7 passages for each net downstream passage.

Downstream movement of males suggested movement of males between the Lake Creek and Secesh River spawning aggregates. Female salmon appeared to have more fidelity to their spawning location. The condition of the fish, the amount of activity through the video station (zero net movement of females) and the swimming appearance on the videotapes indicates these males were not passively drifting downstream as they died. These males were available to spawn again outside of the Lake Creek spawning aggregate in the Secesh River spawning aggregate. This activity has been observed at the Lake Creek site each year. This same behavior occurred in the vicinity of the Secesh River fish counting station in 1999 only.

It was not possible to differentiate each individual fish passing the fish counting station. In 2000 there were a total of 27 salmon with distinctive marks that could be tracked during a portion of the season. This may not have been a complete history of an individual fish's passings, as marks, scars and fungus could have changed over time. For example, an individual fish could pass multiple times with no distinguishing marks, be called an individual fish with a small fungus patch on the tail, be called another individual fish with an additional fungus mark on the head, etc. There were eight distinctly marked fish, which passed more than ten times each (239, 31, 29, 25, 22, 18, 15 and 15). The 29 movements of one male were spaced over five days. This movement was also present in 1997 to 1999.

One uniquely marked fish was observed moving upstream past the Secesh River fish counting station at 3:46 a.m. on July 9, and past the Lake Creek fish counting station at 4:58 p.m. on 10 July. That fish took 37 hours to travel the 15 km between the two sites (about 10 km per day). Bjornn et al. (1992, 1994, 1995) documented average chinook salmon migration rates as fish moved up the Snake River through the hydro system and into the South Fork Salmon River. They calculated migration rates through the three lower reservoirs (53.2 km/day), from Lower Granite Dam to the Snake River site (42.2 km/day), from Snake River site to lower Salmon River (16.6 km/day), and from lower Salmon River to South Fork Salmon River site (12.4 km/day). Migration rates slowed as fish approached spawning areas. Studies of radio tagged chinook salmon in the Kenai River, Alaska closer to spawning areas, reported migration rates of 3.2 km/day overall, and 5.8 km/day for migrations greater than 64 km (Hammarstrom et al. 1985), and 2.1 to 3.5 km/day (Burger et al. 1983).

MONITORING AND EVALUATION

During visual bank and snorkel observations in 2000, very few chinook salmon were found downstream of the fish counting stations. None were heard or seen jumping at the pickets. No fish could be identified as being in any location for more than one day at a time. There were 1,294 and 2,384 fish passages through the Lake Creek and Secesh River fish counting stations in 2000. As in previous years, the average fish made multiple passages through the fish counting chambers at both sites. Multiple passages of individually recognizable fish indicated that upstream and downstream passage was not hampered by the structure. The counting chamber itself did not appear to bother fish either, as evidenced by the fish that entered the Lake Creek counting chamber and held there for over two hours on three occasions. In view of the large number of fish passages, upstream and downstream, and at all times of the day and night, it was felt the counting station was well designed and positioned. Fish were allowed to move freely upstream or downstream. We have concluded that the fish counting stations did not impede the salmon spawner migration in 2000. Visual bank and snorkel observations will continue on a random basis in 2001.

The percent of chinook salmon redds below the Secesh River fish counting station in 2000 was compared to the percent of redds downstream of the site for the five years before the fish counting stations were in place. The percentage of redds below the fish counting station from 1992 to 1996 ranged from 0 to 8.2%. The percent of redds downstream of the site in 2000 was 1.8%, well within that range (Table 4). The redd that was built immediately downstream of the Lake Creek fish counting station was at the head of a riffle. The female was observed passing

Table 4. Spring and summer chinook salmon redd counts in the Secesh River and Lake Creek index areas, and in the Secesh River from the fish counting station downstream to the canyon, 1992 to 2000.

	Number of Redds			Percent of Redds
	Index Area			
Year	Lake Creek	Secesh River	Secesh Counting Station to Canyon	Below Fish Counting Station Location
2000	180	153	6	1.8
1999	24	43	0	0.0
1998	44	68	2	1.8
1997	46	78	5	4.0
1996	31	43	1	1.4
1995	12	18	0	0.0
1994	12	17	0	0.0
1993	44	94	7	5.1
1992	43	66	10	8.2

through the counting chamber on several occasions. The male attending that redd and the redd immediately upstream of the structure passed through the structure 239 times. Operation of the fish counting station did not affect salmon spawner distribution. The amount of spawning downstream of the Secesh River site will continue to be monitored in 2001.

Potential sources of errors in determination of spawner abundance by the underwater video methodology are listed in Table 5 and were described in Faurot et al. (2000). Corrections were made to the total adult spawner abundance when possible. The installation date of the Secesh River and Lake Creek facilities and equipment downtime affected abundance determination in 2000. Without knowledge of the date of arrival of the first fish, it was impossible to make an

Table 5. Potential sources of error in video abundance estimate methodology in 2000.

Concern	Potential Effect	
	Lake Creek	Secesh River
Fish passed before installation	Minimal	Minimal
Fish escaped under the pickets or counting station	Minimal	Minimal
Fish escaped around the ends of the fish guiding fences	Minimal	Minimal
Fish passed during high turbidity and periods of downtime	Minimal	Minimal

estimate of fish passage prior to the commencement of operations. From Figures 6 and 9 it appeared operations commenced near the beginning of the run, especially at Lake Creek. Estimates for fish passage during downtimes were calculated by determining the hourly fish passage rate, during the hours of the outage, two days prior to and after the outage. Equipment outages and periods of high turbidity when fish could not be counted were considered as downtime. A total of 17 and 37 fish were estimated to have passed the Lake Creek and Secesh River fish counting stations, respectively, during downtime (Appendix Table C-2).

A tape-viewer-bias was determined for fish passages missed by the observer. Net escapement observed by the tape reader was compared to net escapement determined by multiple readings of 10 % of the tapes. The tape reader correctly observed 95.6 % of the actual net escapement. This correction amounted to an addition of 36 adult chinook salmon to the Secesh River escapement and 14 to the Lake Creek escapement.

TEMPERATURE AND STAFF GAUGE MEASUREMENTS

The National Marine Fisheries Service maintained a water quality monitoring site near the Secesh River fish counting station that collected water temperature and depth data. During

Table 6. Water temperatures in the vicinity of the Secesh River fish counting station, and adult spring and summer chinook salmon activity 1998, 1999 and 2000.

Activity		Date	Temperature Range (^{o}C)
Operation	1998	7/10 - 9/18	4.9 to 19.5
	1999	7/15 - 9/18	0.4 to 18.2
	2000	6/22 - 9/15	5.7 to 22.1
First Fish	1998	<7/10	N/A
	1999	<7/15	N/A
	2000	<6/22	N/A
First Segment	1998	<7/10 - 8/3	9.9 to 19.0
	1999	<7/15 - 8/14	7.4 to 17.4
	2000	6/22 - 7/25	7.4 to 19.8
Peak Net Upstream Movement	1998	7/18	12.8 to 19.0
	1999	7/20	8.8 to 14.8
	2000	6/27	9.3 to 15.6
Peak Activity	1998	8/27	8.3 to 15.7
	1999	8/17	8.4 to 15.0
	2000	8/16	9.8 to 17.9

N/A Not available. The first fish passed the site before the fish counting station was in operation.

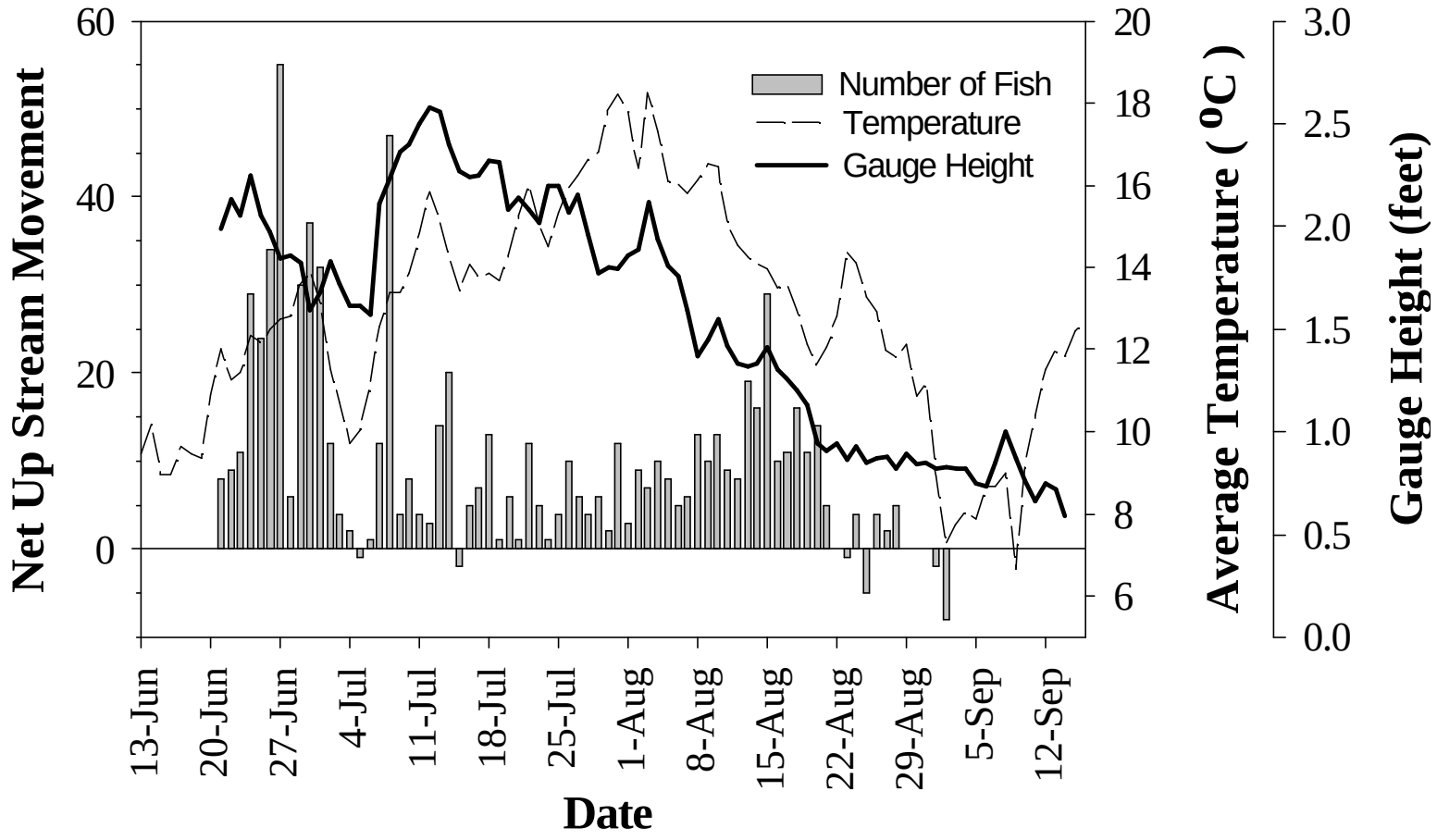

Figure 14. Chinook salmon net upstream escapement, and daily average stream temperature and stream gauge height, at the Secesh River fish counting station in 2000.

operation in 2000 at the Secesh River site, water temperatures varied daily, generally rising until the first week of August and then falling until spawning was completed (Table 6) (Figure 14). Water temperatures during the active upstream migration (first segment of the run) ranged from 7.4 C (daily minimum) to 19.8 C (daily maximum). Temperatures on June 27, the day of peak net upstream movement, ranged from 9.3 C to 15.6 C. The peak of total movement, of adult chinook salmon spawners through Secesh River fish counting station occurred August 16, with temperatures between 9.8 and 17.9 C.

Discharge curves have not been developed for the Secesh River. Stream gauge height at the National Marine Fisheries Service water quality monitoring site was used as an indicator of increase or decrease in discharge. Stream depth generally declined throughout the season, in what is considered a very low flow summer.

FORK LENGTHS

Two parallel lasers separated by 5 cm, were installed and field tested in 2000, in an effort to determine fish lengths using proportions. The Plexiglas viewing window caused reflection and distortion problems and the laser methodology was not satisfactory. Modifications to this system will be made in 2001. Visual fork lengths of fish were taken using the 10 cm grid system painted on the back and bottom plates of the fish counting chamber. Position and orientation of the adult salmon in the counting chamber affected estimated fish length. Lengths were not accurate to ± 5 cm and were rounded to the nearest 10 cm. Length assignments appeared to vary by video observer. This system was not satisfactory to record accurate fish length data. However, jacks could be visually distinguished without the grid system.

The run appeared to be mainly comprised of jacks and four year old fish. Approximately 127 jack salmon migrated upstream past the Secesh River fish counting station in 2000. Of those, 25 were observed upstream passing the Lake Creek fish counting station. In 1999, we estimated 40 and 20 jacks passing Secesh River and Lake Creek sites, respectively, and in 1998 there were no jacks recorded.

RECOMMENDATIONS

- Continue to operate the Lake Creek fish counting station. Snow pack predictions for spring 2001 are very low. Prepare to install the fish counting station early enough to record the first fish passage. Emphasize the modification, installation and operation of laser equipment to determine accurate fish lengths for age group (brood year) composition. Emphasize the purchase, installation and operation of equipment for digital recording and computerized editing of fish movements (Hatch et al. 1998).

- Discontinue operation of the Secesh River fish counting station in 2001. The Secesh River structure was unable to be installed prior to the arrival of the first fish in any year. Investigate engineering designs of more permanent structural parts that would allow installation in time to photograph the first fish. Investigate other passive methods (e. g. split beam sonar, resistivity counters, and electronic counters) that would provide escapement enumeration in larger streams and during periods of higher flow.

- Use the computerized system for editing videotapes. With improvements in the software, the computerized editing system may be workable. Manual editing would provide a backup method and quality control. Fish passages would be directly edited/collapsed onto another tape as time permits. Compare the results of the two methods.

- Improve the lighting conditions in the fish counting chamber. Cover the fish counting chamber to eliminate as much ambient light as possible. Unstable light conditions in the counting chambers have caused problems with editing software. In bright sunlight, surface water movements cause bright light streaks, which trigger the editing system. At night, turbulence reflects the nightlights, triggering the computer system.

- Provide extensive training to personnel. Early operation of the fish counting station would allow additional training of personnel before fish start actively migrating. This should reduce down time due to operator error and, with the additional experience, operators would be able to quickly identify and trouble shoot equipment malfunctions.

- Investigate methods for better sex determinations. The proper sex identification of adult chinook salmon from videotapes, especially early in the season, is an important factor relating redds to female escapement, and production. Continue to evaluate the experimental use of ultrasound to determine sex of actively migrating fish.

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APPENDIX A

Table A-1. Run timing and direction of the spring and summer chinook salmon spawner migration in Lake Creek in 2000.

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (up/down)	Net Upstream Movement
22-Jun	22:26	70	M	Up	1
22-Jun	22:31	70	F	Up	2
23-Jun	20:17	70	-	Up	3
23-Jun	22:26	80	-	Up	4
23-Jun	22:31	80	-	Up	5
24-Jun	17:10	85	-	Up	6
Correction for outage 6/24, 19:18 to 6/25, 12:16 (+2); 6/24 (+1), 6/25 (+1)					8
25-Jun	12:27	70	M	Up	9
25-Jun	15:34	60	M	Up	10
25-Jun	18:21	70	F	Up	11
25-Jun	18:23	70	M	Up	12
25-Jun	18:46	70	F	Up	13
25-Jun	18:51	70	M	Up	14
25-Jun	20:17	70	F	Up	15
25-Jun	22:53	70	F	Up	16
26-Jun	0:10	70	F	Up	17
26-Jun	0:20	70	F	Down	16
26-Jun	0:22	80	F	Up	17
26-Jun	0:22	70	F	Up	18
Correction for outage 6/26, 2:14 to 6/27, 12:30 (+0)					18
27-Jun	13:51	70	F	Up	19
27-Jun	13:52	70	M	Up	20
27-Jun	14:29	70	M	Up	21
27-Jun	14:30	70	M	Up	22
27-Jun	14:32	60	M	Up	23
27-Jun	14:49	70	F	Up	24
27-Jun	14:49	70	M	Up	25
27-Jun	14:49	60	F	Up	26

Table A-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
27-Jun	14:52	70	M	Up	27
27-Jun	15:01	70	F	Up	28
27-Jun	15:54	60	M	Up	29
27-Jun	16:01	70	M	Up	30
27-Jun	17:54	70	F	Up	31
27-Jun	18:05	80	M	Up	32
27-Jun	18:11	70	F	Up	33
27-Jun	18:12	70	M	Up	34
27-Jun	18:36	80	M	Up	35
27-Jun	19:13	70	F	Up	36
27-Jun	19:21	70	M	Up	37
27-Jun	19:23	70	M	Up	38
27-Jun	20:49	70	M	Up	39
27-Jun	20:50	70	F	Up	40
27-Jun	21:11	70	F	Up	41
27-Jun	22:00	70	F	Up	42
27-Jun	23:01	70	M	Up	43
27-Jun	23:17	70	F	Up	44
27-Jun	23:56	50	M	Up	45
28-Jun	0:19	70	F	Up	46
28-Jun	0:20	80	M	Up	47
28-Jun	2:44	-	F	Down	46
28-Jun	14:55	70	F	Up	47
28-Jun	15:33	70	F	Up	48
28-Jun	15:33	70	F	Up	49
28-Jun	15:52	70	F	Up	50
28-Jun	18:18	70	F	Up	51
28-Jun	18:18	70	F	Up	52
28-Jun	18:18	70	M	Up	53
28-Jun	18:58	70	F	Up	54
28-Jun	18:58	70	F	Up	55
28-Jun	19:06	70	F	Down	54

Table A-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
28-Jun	19:09	70	F	Down	53
28-Jun	20:19	70	F	Up	54
28-Jun	21:23	70	M	Up	55
28-Jun	21:23	70	M	Up	56
28-Jun	21:23	70	F	Up	57
28-Jun	22:49	70	F	Up	58
28-Jun	22:53	70		Down	57
28-Jun	23:16	70	F	Up	58
28-Jun	23:54	70	F	Up	59
28-Jun	23:57	70	F	Up	60
29-Jun	3:58	70	F	Up	61
29-Jun	6:00	70	F	Down	60
29-Jun	6:02	70	F	Up	61
29-Jun	6:03	70	F	Down	60
29-Jun	14:21	70	M	Up	61
29-Jun	14:35	70	F	Up	62
29-Jun	14:51	80	F	Up	63
29-Jun	14:51	70	M	Up	64
29-Jun	14:55	70	F	Up	65
29-Jun	15:39	70	F	Up	66
29-Jun	15:40	70	M	Up	67
29-Jun	15:59	70	F	Up	68
29-Jun	15:59	70	M	Up	69
29-Jun	16:00	70	F	Up	70
29-Jun	16:00	70	M	Up	71
29-Jun	16:10	70	F	Up	72
29-Jun	16:10	70	M	Up	73
29-Jun	16:10	70	F	Up	74
29-Jun	16:10	70	F	Up	75
29-Jun	16:29	70	F	Up	76
29-Jun	18:31	70	M	Up	77
29-Jun	18:31	70	M	Up	78

Table A-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
29-Jun	18:31	70	F	Up	79
29-Jun	22:28	70	F	Up	80
29-Jun	22:52	70	F	Up	81
29-Jun	22:59	70	F	Down	80
29-Jun	23:02	70	F	Down	79
29-Jun	23:15	70	F	Down	78
30-Jun	0:00	70	F	Down	77
30-Jun	2:20	80	-	Up	78
30-Jun	4:06	70	-	Up	79
30-Jun	4:49	80	-	Up	80
30-Jun	5:13	70	-	Up	81
30-Jun	5:26	-	-	Up	82
30-Jun	5:31	-	-	Down	81
	Correction for outage 6/30, 5:31 to 6/30, 9:25 (+1)				82
30-Jun	13:09	70	F	Up	83
30-Jun	13:29	70	F	Up	84
30-Jun	13:51	70	M	Down	83
30-Jun	17:11	70	F	Up	84
30-Jun	17:54	70	F	Up	85
30-Jun	20:14	70	F	Up	86
30-Jun	21:02	70	F	Up	87
30-Jun	21:02	70	F	Up	88
30-Jun	21:07	70	M	Up	89
30-Jun	21:40	70	F	Up	90
30-Jun	22:01	70	F	Up	91
30-Jun	22:05	70	F	Up	92
30-Jun	22:28	70	M	Up	93
30-Jun	22:46	70	M	Up	94
30-Jun	22:51	70	F	Up	95
30-Jun	23:37	70	M	Up	96
1-Jul	0:01	70	M	Up	97
1-Jul	3:55	70	F	Up	98

Table A-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
1-Jul	0:27	70	M	Up	99
1-Jul	0:34	70	F	Up	100
1-Jul	6:24	70	M	Down	99
1-Jul	8:44	70	F	Up	100
1-Jul	8:52	70	F	Up	101
1-Jul	8:52	70	M	Up	102
1-Jul	8:52	70	F	Up	103
1-Jul	8:52	70	F	Up	104
1-Jul	9:58	70	F	Down	103
1-Jul	12:22	70	M	Down	102
1-Jul	12:27	70	M	Up	103
1-Jul	12:29	70	M	Down	102
1-Jul	12:29	70	M	Up	103
1-Jul	13:30	60	M	Up	104
1-Jul	13:31	70	F	Up	105
1-Jul	13:39	70	M	Up	106
1-Jul	13:42	70	M	Up	107
1-Jul	14:20	70	M	Up	108
1-Jul	14:22	70	M	Up	109
1-Jul	14:29	70	M	Up	110
1-Jul	14:44	70	F	Up	111
1-Jul	14:46	70	F	Up	112
1-Jul	14:46	70	M	Up	113
1-Jul	14:49	70	M	Up	114
1-Jul	14:51	60	M	Down	113
1-Jul	14:52	70	F	Down	112
1-Jul	14:52	70	M	Down	111
1-Jul	14:53	70	F	Down	110
1-Jul	14:53	70	M	Down	109
1-Jul	14:53	70	M	Down	108
1-Jul	14:53	70	M	Down	107
1-Jul	15:27	70	M	Up	108

Table A-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
1-Jul	15:31	70	M	Up	109
1-Jul	15:33	70	F	Up	110
1-Jul	15:57	70	M	Up	111
1-Jul	15:57	70	F	Up	112
1-Jul	15:57	70	F	Up	113
1-Jul	16:04	70	F	Up	114
1-Jul	16:07	70	M	Up	115
1-Jul	16:26	70	M	Down	114
1-Jul	16:26	70	M	Down	113
1-Jul	16:26	70	M	Up	114
1-Jul	16:26	70	M	Up	115
1-Jul	16:28	70	M	Down	114
1-Jul	16:28	70	M	Down	113
1-Jul	16:28	70	M	Up	114
1-Jul	16:32	70	M	Up	115
1-Jul	16:40	70	M	Up	116
1-Jul	17:15	70	F	Up	117
1-Jul	17:15	70	M	Up	118
1-Jul	17:17	70	F	Up	119
1-Jul	17:22	80	M	Up	120
1-Jul	17:36	80	M	Down	119
1-Jul	17:38	80	M	Up	120
1-Jul	17:39	70	F	Down	119
1-Jul	17:39	70	F	Down	118
1-Jul	23:10	70	M	Up	119
1-Jul	23:15	80	M	Up	120
1-Jul	23:17	70	F	Up	121
1-Jul	23:48	70	F	Up	122
1-Jul	23:53	70	F	Down	121
2-Jul	0:09	70	M	Up	122
2-Jul	0:11	70	M	Down	121
2-Jul	4:02	70	M	Up	122

Table A-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
2-Jul	4:05	80	M	Up	123
2-Jul	6:03	80	M	Down	122
2-Jul	6:06	80	M	Up	123
2-Jul	6:08	80	M	Down	122
2-Jul	6:52	70	M	Down	121
2-Jul	6:53	70	M	Up	122
	Correction for outage 7/2, 10:06 to 7/2, 15:12 (+3)				125
2-Jul	15:34	70	F	Up	126
2-Jul	16:57	70	F	Up	127
2-Jul	22:21	70	M	Up	128
3-Jul	3:11	70	F	Up	129
3-Jul	10:19	70	M	Up	130
3-Jul	10:20	70	M	Up	131
3-Jul	10:20	70	M	Up	132
3-Jul	10:20	70	F	Up	133
3-Jul	10:23	70	F	Up	134
3-Jul	11:11	60	M	Up	135
3-Jul	16:00	50	M	Up	136
3-Jul	16:55	70	M	Up	137
3-Jul	16:55	70	M	Up	138
3-Jul	16:55	70	M	Up	139
3-Jul	16:55	70	M	Up	140
3-Jul	17:08	70	M	Up	141
3-Jul	17:45	80	M	Up	142
3-Jul	17:45	70	M	Up	143
3-Jul	17:50	70	M	Up	144
3-Jul	22:35	70	F	Up	145
3-Jul	23:16	50	M	Up	146
3-Jul	23:19	70	M	Up	147
3-Jul	23:19	70	F	Up	148
3-Jul	23:19	70	F	Up	149
3-Jul	23:32	40	M	Down	148

Table A-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
3-Jul	23:32	70	F	Down	147
3-Jul	23:36	70	F	Up	148
3-Jul	23:39	70	F	Down	147
3-Jul	23:43	70	F	Up	148
3-Jul	23:55	70	F	Down	147
3-Jul	23:57	80	M	Up	148
4-Jul	3:47	70	M	Down	147
4-Jul	3:49	70	M	Up	148
4-Jul	3:51	70	M	Down	147
4-Jul	5:02	70	M	Down	146
4-Jul	23:14	50	M	Down	145
4-Jul	23:23	70	M	Up	146
4-Jul	23:48	70	M	Down	145
5-Jul	0:16	70	M	Down	144
5-Jul	0:19	70	F	Up	145
5-Jul	0:35	70	M	Down	144
5-Jul	0:38	70	M	Up	145
5-Jul	0:59	70	M	Down	144
6-Jul	1:14	80	M	Up	145
7-Jul	0:11	70	F	Up	146
7-Jul	22:50	80	F	Up	147
7-Jul	23:07	80	F	Up	148
8-Jul	0:42	70	M	Up	149
8-Jul	1:27	70	M	Up	150
8-Jul	1:44	80	F	Up	151
8-Jul	16:16	50	F	Up	152
8-Jul	16:17	70	F	Up	153
8-Jul	16:30	80	F	Up	154
8-Jul	17:25	70	F	Up	155
8-Jul	21:48	60	F	Up	156
Correction for outage 7/8, 22:15 to 7/9 12:30 (+3); 7/8 (1), 7/9 (+2)					159
9-Jul	13:57	60	M	Up	160

Table A-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
9-Jul	14:04	70	M	Up	161
9-Jul	14:33	70	F	Up	162
9-Jul	14:34	80	F	Up	163
9-Jul	14:38	80	F	Up	164
9-Jul	16:18	90	F	Up	165
9-Jul	17:30	80	F	Up	166
9-Jul	18:12	70	M	Up	167
9-Jul	20:54	70	F	Up	168
9-Jul	21:09	70	M	Up	169
9-Jul	23:45	70	M	Up	170
9-Jul	23:51	50	M	Up	171
10-Jul	0:24	50	F	Up	172
10-Jul	1:12	80	M	Up	173
10-Jul	3:17	70	F	Up	174
10-Jul	3:39	80	M	Up	175
10-Jul	5:51	70	M	Down	174
10-Jul	15:27	80	M	Up	175
10-Jul	15:27	80	M	Up	176
10-Jul	15:27	80	F	Up	177
10-Jul	16:16	80	F	Up	178
10-Jul	16:40	70	M	Up	179
10-Jul	16:58	80	F	Up	180
10-Jul	16:59	70	F	Up	181
10-Jul	16:59	70	M	Up	182
10-Jul	19:01	50	M	Up	183
10-Jul	20:19	80	M	Up	184
10-Jul	20:19	70	F	Up	185
10-Jul	20:23	70	M	Up	186
10-Jul	20:33	-	-	Up	187
10-Jul	20:36	80	F	Up	188
10-Jul	20:36	70	M	Up	189
11-Jul	0:16	70	M	Down	188

Table A-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
11-Jul	1:32	80	M	Down	187
11-Jul	2:44	80	F	Up	188
11-Jul	4:12	70	M	Up	189
11-Jul	21:54	50	M	Up	190
11-Jul	22:41	70	F	Up	191
12-Jul	0:10	80	M	Up	192
12-Jul	7:04	70	F	Up	193
12-Jul	20:42	80	F	Up	194
12-Jul	21:44	70	M	Down	193
12-Jul	21:55	50	M	Up	194
12-Jul	22:20	70	F	Up	195
13-Jul	2:01	80	F	Up	196
13-Jul	5:57	80	F	Down	195
13-Jul	5:18	80	F	Up	196
Correction for outage 7/13, 17:45 to 7/14, 13:00 (+4); 7/13 (+2), 7/14 (+2)					200
14-Jul	22:46	70	F	Down	199
14-Jul	22:47	-	F	Up	200
14-Jul	23:15	70	F	Down	199
14-Jul	23:15	70	F	Up	200
14-Jul	23:23	70	F	Down	199
15-Jul	0:11	50	M	Up	200
15-Jul	0:43	80	M	Up	201
15-Jul	3:20	70	M	Up	202
15-Jul	5:41	70	M	Up	203
15-Jul	22:53	50	M	Up	204
15-Jul	23:10	70	M	Up	205
15-Jul	23:49	70	F	Up	206
16-Jul	1:08	70	F	Up	207
16-Jul	2:15	80	F	Up	208
16-Jul	3:57	70	M	Up	209
16-Jul	4:52	70	M	Down	208
16-Jul	13:09	70	F	Up	209

Table A-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
16-Jul	14:17	80	F	Up	210
16-Jul	20:00	80	F	Up	211
17-Jul	0:00	70	M	Down	210
17-Jul	0:07	70	F	Up	211
17-Jul	0:12	70	F	Down	210
17-Jul	5:32	50	F	Down	209
17-Jul	20:49	70	F	Up	210
17-Jul	21:26	80	M	Up	211
18-Jul	2:58	70	M	Up	212
18-Jul	18:49	80	M	Up	213
18-Jul	22:23	-	-	Down	212
18-Jul	22:24	-	-	Down	211
18-Jul	22:25	-	-	Up	212
18-Jul	22:42	-	-	Up	213
18-Jul	22:48	-	-	Up	214
18-Jul	23:06	-	-	Up	215
19-Jul	0:55	-	-	Up	216
19-Jul	1:01	50	M	Up	217
19-Jul	2:08	-	-	Up	218
19-Jul	2:57	-	-	Down	217
19-Jul	3:00	-	-	Up	218
19-Jul	3:07	-	-	Up	219
19-Jul	3:08	-	-	Up	220
19-Jul	3:37	-	-	Down	219
19-Jul	22:58	80	F	Up	220
20-Jul	2:05	80	M	Up	221
20-Jul	3:47	70	M	Down	220
20-Jul	4:58	80	M	Up	221
20-Jul	13:19	50	M	Up	222
20-Jul	23:06	80	M	Up	223
21-Jul	3:13	70	M	Up	224
21-Jul	4:23	50	M	Up	225

Table A-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
21-Jul	4:26	50	M	Down	224
21-Jul	23:18	70	M	Up	225
22-Jul	1:36	50	M	Up	226
23-Jul	4:09	70	M	Up	227
23-Jul	18:59	80	M	Up	228
23-Jul	22:27	70	M	Up	229
24-Jul	0:37	70	F	Up	230
24-Jul	0:47	70	M	Up	231
24-Jul	2:12	50	M	Down	230
24-Jul	2:33	50	M	Up	231
24-Jul	3:07	50	M	Down	230
24-Jul	4:41	80	M	Down	229
25-Jul	6:01	70	M	Down	228
26-Jul	0:17	50	M	Up	229
26-Jul	0:31	50	M	Down	228
26-Jul	1:16	80	M	Down	227
26-Jul	1:20	70	M	Up	228
26-Jul	1:24	70	M	Down	227
26-Jul	2:14	70	M	Up	228
26-Jul	4:34	60	M	Up	229
26-Jul	4:38	50	M	Up	230
26-Jul	10:56	80	M	Up	233
27-Jul	6:05	40	M	Up	232
27-Jul	21:53	70	M	Up	233
27-Jul	23:43	70	M	Down	232
28-Jul	2:44	70	M	Up	233
28-Jul	5:02	70	M	Down	232
28-Jul	21:57	70	M	Up	233
28-Jul	23:19	70	M	Up	234
28-Jul	23:32	70	M	Up	235
28-Jul	23:35	80	F	Up	236
28-Jul	23:45	80	F	Up	237

Table A-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
28-Jul	23:56	80	F	Up	238
29-Jul	0:01	80	F	Down	237
29-Jul	0:07	80	M	Up	238
29-Jul	0:16	50	M	Up	239
29-Jul	0:44	70	M	Down	238
29-Jul	0:50	70	M	Up	239
29-Jul	0:59	70	M	Down	238
29-Jul	1:10	70	M	Down	237
29-Jul	1:12	70	M	Up	238
29-Jul	1:13	70	M	Down	237
29-Jul	2:26	70	M	Down	236
29-Jul	2:31	70	M	Up	237
29-Jul	2:33	60	M	Down	236
29-Jul	2:40	60	M	Up	237
29-Jul	3:00	70	M	Down	236
29-Jul	4:12	60	M	Down	235
29-Jul	4:15	60	M	Up	236
29-Jul	4:17	60	M	Down	235
29-Jul	4:38	60	M	Down	234
29-Jul	5:22	80	F	Up	235
29-Jul	21:44	70	M	Up	236
29-Jul	22:07	80	F	Down	235
29-Jul	22:11	80	F	Up	236
29-Jul	22:12	80	F	Down	235
29-Jul	22:20	70	F	Up	236
29-Jul	22:29	70	F	Down	235
30-Jul	1:04	50	M	Down	234
30-Jul	3:23	70	M	Down	233
30-Jul	5:12	70	M	Down	232
30-Jul	5:17	70	M	Down	231
30-Jul	17:56	80	M	Up	232
30-Jul	18:48	70	F	Up	233

Table A-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
30-Jul	18:48	70	M	Up	234
30-Jul	20:32	70	M	Down	233
30-Jul	21:20	70	M	Down	232
30-Jul	22:42	70	F	Up	233
30-Jul	22:43	60	M	Up	234
30-Jul	22:50	70	M	Down	233
30-Jul	22:54	80	M	Up	234
30-Jul	22:57	70	M	Down	233
30-Jul	22:58	60	M	Down	232
30-Jul	23:04	80	M	Up	233
30-Jul	23:06	70	M	Down	232
30-Jul	23:11	70	M	Up	233
30-Jul	23:12	60	M	Down	232
31-Jul	0:24	70	F	Up	233
31-Jul	1:34	50	M	Up	234
31-Jul	1:43	70	M	Up	235
31-Jul	1:47	70	M	Down	234
31-Jul	1:57	70	M	Up	235
31-Jul	2:05	70	M	Up	236
31-Jul	2:56	70	M	Up	237
31-Jul	2:58	70	M	Down	236
31-Jul	3:02	70	M	Up	237
31-Jul	3:06	70	M	Down	236
31-Jul	4:06	70	M	Up	237
31-Jul	4:20	70	M	Down	236
31-Jul	5:10	60	M	Down	235
31-Jul	5:21	70	M	Up	236
31-Jul	5:42	70	M	Down	235
31-Jul	7:35	80	M	Up	236
31-Jul	19:30	80	M	Up	237
31-Jul	21:49	70	M	Down	236
31-Jul	23:49	70	M	Up	237

Table A-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
1-Aug	0:25	70	M	Up	238
1-Aug	0:27	70	M	Down	237
1-Aug	0:31	70	M	Up	238
1-Aug	2:30	70	M	Down	237
1-Aug	2:33	70	M	Down	236
1-Aug	4:31	80	M	Up	237
1-Aug	4:50	80	M	Up	238
1-Aug	5:10	80	M	Up	239
1-Aug	6:02	70	M	Down	238
1-Aug	6:07	80	F	Up	239
1-Aug	6:17	70	M	Down	238
1-Aug	6:17	80	F	Down	237
1-Aug	12:52	80	F	Up	238
1-Aug	13:06	70	M	Up	239
Correction for outage 8/1, 15:00 to 8/2, 14:15 (+5); 8/1 (+2), 8/3 (+3)					244
2-Aug	15:18	70	F	Up	245
2-Aug	15:45	60	M	Up	246
2-Aug	16:29	70	M	Up	247
2-Aug	19:46	70	M	Up	248
3-Aug	0:03	80	M	Up	249
3-Aug	1:16	80	M	Down	248
3-Aug	2:38	70	M	Up	249
3-Aug	2:58	50	M	Up	250
3-Aug	3:38	70	M	Up	251
3-Aug	5:56	50	M	Up	252
3-Aug	5:57	50	M	Down	251
3-Aug	16:44	80	M	Down	250
3-Aug	17:01	70	M	Up	251
3-Aug	20:31	70	M	Up	252
3-Aug	21:40	70	M	Down	251
3-Aug	22:29	70	M	Up	252
4-Aug	0:19	70	F	Up	253

Table A-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
4-Aug	1:07	70	M	Down	252
4-Aug	1:27	70	M	Down	251
4-Aug	1:48	70	F	Up	252
4-Aug	2:00	70	M	Up	253
4-Aug	2:54	70	M	Up	254
4-Aug	3:36	70	M	Down	253
4-Aug	4:00	70	F	Up	254
4-Aug	4:07	70	M	Up	255
4-Aug	4:44	50	M	Up	256
4-Aug	4:46	80	M	Down	255
4-Aug	4:56	70	M	Up	256
4-Aug	10:02	70	M	Down	255
4-Aug	18:58	80	M	Up	256
4-Aug	22:09	70	M	Up	257
5-Aug	0:56	70	M	Down	256
5-Aug	1:03	70	M	Up	257
5-Aug	2:37	70	M	Down	256
5-Aug	4:00	70	M	Up	257
5-Aug	4:08	70	M	Up	258
5-Aug	4:16	50	M	Up	259
5-Aug	5:33	80	M	Up	260
5-Aug	20:22	80	M	Up	261
5-Aug	22:08	70	M	Up	262
6-Aug	0:22	40	M	Down	261
6-Aug	0:25	70	M	Down	260
6-Aug	0:29	60	M	Up	261
6-Aug	0:32	70	M	Up	262
6-Aug	1:07	70	M	Down	261
6-Aug	1:25	50	M	Down	260
6-Aug	1:26	70	M	Down	259
6-Aug	1:27	70	M	Up	260
6-Aug	1:28	70	M	Up	261

Table A-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
6-Aug	1:44	70	M	Down	260
6-Aug	1:57	70	M	Up	261
6-Aug	2:29	70	M	Down	250
6-Aug	2:55	70	M	Up	261
6-Aug	3:01	70	M	Up	262
6-Aug	3:52	50	M	Up	263
6-Aug	4:00	70	F	Down	262
6-Aug	4:13	70	M	Down	261
6-Aug	4:17	70	M	Down	260
6-Aug	4:23	70	M	Up	261
6-Aug	6:08	70	M	Down	260
6-Aug	11:40	80	M	Up	261
6-Aug	13:46	70	M	Up	262
6-Aug	13:56	70	M	Down	261
6-Aug	14:12	70	F	Up	262
6-Aug	14:12	70	M	Up	263
6-Aug	15:06	70	M	Down	262
6-Aug	15:14	70	M	Up	263
6-Aug	16:04	70	M	Down	262
6-Aug	16:44	70	M	Up	263
6-Aug	17:55	80	F	Up	264
6-Aug	18:14	70	M	Down	263
6-Aug	18:25	70	M	Up	264
6-Aug	19:52	80	M	Down	263
6-Aug	20:16	50	M	Down	262
6-Aug	20:20	70	M	Down	261
6-Aug	20:32	50	M	Up	262
6-Aug	20:35	80	M	Up	263
6-Aug	21:54	50	M	Down	262
6-Aug	22:25	70	M	Up	263
6-Aug	22:55	70	M	Down	262
6-Aug	23:15	70	M	Down	261

Table A-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
6-Aug	23:48	70	M	Up	262
7-Aug	0:25	70	M	Up	263
7-Aug	0:28	60	M	Down	262
7-Aug	0:34	60	M	Up	263
7-Aug	1:26	50	M	Down	262
7-Aug	1:29	60	M	Up	263
7-Aug	1:31	60	M	Down	262
7-Aug	1:33	50	M	Up	263
7-Aug	1:35	70	M	Down	262
7-Aug	1:37	50	M	Up	263
7-Aug	1:37	50	M	Up	264
7-Aug	1:39	60	M	Down	263
7-Aug	1:39	40	M	Down	262
7-Aug	1:40	40	M	Up	263
7-Aug	1:41	70	M	Up	264
7-Aug	2:16	60	M	Up	265
7-Aug	3:14	40	M	Down	264
7-Aug	3:18	70	M	Down	263
7-Aug	3:33	50	M	Down	262
7-Aug	3:38	50	M	Up	263
7-Aug	4:37	70	M	Down	262
7-Aug	4:47	70	M	Up	263
7-Aug	4:48	70	M	Down	262
7-Aug	4:50	70	M	Up	263
7-Aug	4:50	70	M	Down	262
7-Aug	4:54	70	M	Up	263
7-Aug	4:55	70	M	Down	262
7-Aug	4:56	70	M	Up	263
7-Aug	4:56	70	M	Up	264
7-Aug	4:58	70	M	Down	263
7-Aug	4:59	70	M	Down	262
7-Aug	5:52	70	M	Up	263

Table A-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
7-Aug	5:52	70	M	Up	264
7-Aug	6:12	70	M	Down	263
7-Aug	6:14	70	M	Down	262
7-Aug	6:23	70	M	Up	263
7-Aug	6:25	70	M	Up	264
7-Aug	6:27	70	M	Down	263
7-Aug	6:31	70	M	Up	264
7-Aug	6:40	70	M	Up	265
7-Aug	7:44	70	F	Up	266
7-Aug	7:57	50	M	Up	267
7-Aug	8:03	70	M	Down	266
7-Aug	8:12	70	M	Up	267
7-Aug	8:13	70	M	Down	266
7-Aug	8:15	70	M	Up	267
7-Aug	8:15	70	M	Down	266
7-Aug	8:18	70	M	Up	267
7-Aug	8:19	70	M	Up	268
7-Aug	8:50	70	M	Down	267
7-Aug	9:05	70	M	Down	266
7-Aug	9:11	70	M	Up	267
7-Aug	9:12	70	M	Up	268
7-Aug	10:06	70	M	Up	269
7-Aug	10:09	70	M	Down	268
7-Aug	10:13	70	M	Up	269
7-Aug	10:18	70	M	Down	268
7-Aug	10:33	70	M	Up	269
7-Aug	11:02	70	M	Down	268
7-Aug	11:04	70	M	Up	269
7-Aug	11:12	70	M	Down	268
7-Aug	11:20	70	M	Up	269
7-Aug	11:22	70	M	Down	268
7-Aug	16:10	70	M	Up	269

Table A-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
7-Aug	16:10	70	M	Up	270
7-Aug	16:10	70	M	Down	269
7-Aug	16:20	70	M	Up	270
7-Aug	16:27	70	M	Down	269
7-Aug	18:30	70	M	Down	268
7-Aug	18:36	80	M	Down	267
7-Aug	18:36	70	M	Down	266
7-Aug	18:37	70	M	Up	267
7-Aug	18:37	80	M	Up	268
7-Aug	18:38	80	M	Down	267
7-Aug	18:39	70	M	Up	268
7-Aug	18:42	70	M	Down	267
7-Aug	18:43	70	M	Up	268
7-Aug	18:43	70	M	Up	269
7-Aug	18:43	70	M	Down	268
7-Aug	18:43	70	M	Down	267
7-Aug	18:44	70	M	Up	268
7-Aug	18:44	70	M	Up	269
7-Aug	18:45	70	M	Down	268
7-Aug	18:48	70	M	Up	269
7-Aug	18:51	70	M	Down	268
7-Aug	18:52	80	M	Down	267
7-Aug	18:54	70	M	Up	268
7-Aug	18:54	70	M	Up	269
7-Aug	18:54	70	M	Down	268
7-Aug	18:54	70	M	Up	269
7-Aug	18:54	70	M	Up	270
7-Aug	18:55	70	M	Down	269
7-Aug	18:58	70	M	Up	270
7-Aug	19:00	70	M	Down	269
7-Aug	19:03	70	M	Down	268
7-Aug	19:04	70	M	Up	269

Table A-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
7-Aug	19:04	70	M	Up	270
7-Aug	19:05	70	M	Down	269
7-Aug	19:09	70	M	Up	270
7-Aug	19:11	70	M	Down	269
7-Aug	19:11	70	M	Down	268
7-Aug	19:12	70	M	Up	269
7-Aug	19:12	70	M	Up	270
7-Aug	19:13	70	M	Down	269
7-Aug	19:13	70	M	Down	268
7-Aug	19:17	70	M	Up	269
7-Aug	19:18	70	M	Down	268
7-Aug	19:50	70	M	Up	269
7-Aug	19:53	70	M	Down	268
7-Aug	20:26	70	M	Up	269
7-Aug	20:28	70	M	Down	268
7-Aug	22:36	60	M	Up	269
7-Aug	23:55	70	M	Up	270
7-Aug	23:56	70	M	Down	269
8-Aug	0:03	70	M	Up	270
8-Aug	0:13	70	M	Down	269
8-Aug	0:31	70	M	Up	270
8-Aug	0:50	70	M	Down	269
8-Aug	1:06	70	M	Up	270
8-Aug	1:10	70	M	Down	269
8-Aug	1:10	70	F	Up	270
8-Aug	1:18	70	M	Up	271
8-Aug	1:40	70	M	Down	270
8-Aug	1:58	70	M	Up	271
8-Aug	1:59	70	M	Down	270
8-Aug	2:05	70	M	Up	271
8-Aug	2:08	70	M	Down	270
8-Aug	4:18	70	M	Up	271

Table A-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
8-Aug	4:20	70	M	Up	272
8-Aug	4:22	70	M	Down	271
8-Aug	4:59	70	M	Up	272
8-Aug	5:15	70	M	Down	271
8-Aug	6:02	70	M	Up	272
8-Aug	6:05	70	M	Down	271
8-Aug	6:29	70	M	Down	260
8-Aug	7:05	70	M	Up	271
8-Aug	7:05	70	M	Up	272
8-Aug	7:22	70	M	Down	271
8-Aug	7:22	70	M	Down	270
8-Aug	7:27	70	M	Up	271
8-Aug	7:27	70	M	Up	272
8-Aug	7:27	70	M	Down	271
8-Aug	7:27	70	M	Down	260
8-Aug	7:29	70	M	Up	271
8-Aug	7:29	70	M	Up	272
8-Aug	7:30	70	M	Down	271
8-Aug	7:33	70	M	Down	260
8-Aug	7:37	70	M	Up	271
8-Aug	7:47	70	M	Up	272
8-Aug	7:49	70	M	Down	271
8-Aug	7:53	70	M	Up	272
8-Aug	8:03	70	M	Down	271
8-Aug	8:30	70	M	Up	272
8-Aug	8:31	70	M	Down	271
8-Aug	9:48	70	M	Up	272
8-Aug	9:58	70	M	Down	271
8-Aug	12:30	70	M	Up	272
8-Aug	12:32	70	F	Up	273
8-Aug	13:44	70	M	Down	272
8-Aug	13:52	60	F	Up	273

Table A-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
8-Aug	14:17	70	F	Down	272
8-Aug	15:00	70	M	Up	273
8-Aug	15:12	70	M	Down	272
8-Aug	16:55	70	M	Up	273
8-Aug	16:56	70	M	Down	272
8-Aug	20:57	70	M	Up	273
8-Aug	21:00	70	M	Down	272
8-Aug	21:19	70	M	Up	273
8-Aug	21:39	70	M	Up	274
8-Aug	21:41	70	M	Down	273
8-Aug	22:53	50	M	Up	274
8-Aug	23:41	70	M	Up	275
8-Aug	23:48	70	F	Up	276
9-Aug	0:13	70	M	Down	275
9-Aug	0:47	70	M	Up	276
9-Aug	0:47	70	M	Up	277
9-Aug	0:47	70	M	Down	276
9-Aug	0:49	70	M	Up	277
9-Aug	0:49	70	M	Up	278
9-Aug	0:50	70	M	Down	277
9-Aug	0:51	50	M	Down	276
9-Aug	0:55	40	M	Up	277
9-Aug	0:57	70	M	Up	278
9-Aug	0:57	50	M	Down	277
9-Aug	1:00	70	M	Down	276
9-Aug	1:13	70	M	Up	277
9-Aug	1:18	70	M	Down	276
9-Aug	2:13	70	M	Up	277
9-Aug	2:14	70	M	Down	276
9-Aug	2:17	70	M	Up	277
9-Aug	2:34	70	M	Down	276
9-Aug	2:42	80	F	Up	277

Table A-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
9-Aug	2:48	70	M	Up	278
9-Aug	3:34	50	M	Down	277
9-Aug	3:38	50	M	Up	278
9-Aug	3:39	70	M	Down	277
9-Aug	3:52	70	M	Up	278
9-Aug	4:34	70	M	Down	277
9-Aug	4:44	40	M	Down	276
9-Aug	6:16	70	M	Up	277
9-Aug	6:16	70	M	Down	276
9-Aug	6:33	70	M	Up	277
9-Aug	6:35	70	M	Down	276
9-Aug	6:39	70	M	Up	277
9-Aug	6:39	70	M	Down	276
9-Aug	8:36	70	M	Up	277
9-Aug	8:36	70	M	Up	278
9-Aug	8:37	70	M	Down	277
9-Aug	8:38	70	M	Down	276
9-Aug	8:40	70	M	Up	277
9-Aug	8:40	70	M	Up	278
9-Aug	8:40	70	M	Up	279
9-Aug	8:42	70	M	Down	278
9-Aug	8:42	70	M	Down	277
9-Aug	8:46	70	M	Up	278
9-Aug	8:47	70	M	Down	277
9-Aug	8:51	70	M	Up	278
9-Aug	8:51	70	M	Up	279
9-Aug	8:52	70	M	Down	278
9-Aug	8:52	70	M	Down	277
9-Aug	9:56	70	M	Up	278
9-Aug	10:01	70	M	Down	277
9-Aug	11:09	70	M	Up	278
9-Aug	11:10	70	M	Down	277

Table A-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
9-Aug	14:05	70	M	Up	278
9-Aug	14:32	70	M	Down	277
9-Aug	15:02	50	M	Up	278
9-Aug	15:50	50	M	Down	277
9-Aug	15:56	70	M	Up	278
9-Aug	15:58	70	M	Down	277
9-Aug	16:43	70	M	Up	278
9-Aug	16:46	70	M	Down	277
9-Aug	17:23	70	F	Up	278
9-Aug	17:52	80	M	Up	279
9-Aug	18:01	70	M	Up	280
9-Aug	18:03	70	M	Down	279
9-Aug	18:05	70	M	Up	280
9-Aug	18:08	70	M	Down	279
9-Aug	18:38	80	F	Up	280
9-Aug	18:38	70	M	Up	281
9-Aug	18:51	70	M	Down	280
9-Aug	18:55	70	M	Up	281
9-Aug	18:58	70	M	Down	280
9-Aug	19:04	70	M	Up	281
9-Aug	19:30	70	M	Down	280
9-Aug	19:37	70	M	Up	281
9-Aug	19:42	70	M	Down	280
9-Aug	20:28	70	M	Up	281
9-Aug	20:30	70	M	Down	280
9-Aug	21:12	70	M	Up	281
9-Aug	21:20	70	M	Down	280
9-Aug	22:47	70	M	Up	281
9-Aug	22:51	70	M	Down	280
9-Aug	22:52	50	M	Up	281
9-Aug	23:03	70	M	Up	282
10-Aug	0:25	70	M	Down	281

Table A-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
10-Aug	0:53	70	M	Down	280
10-Aug	0:56	70	M	Up	281
10-Aug	0:58	70	M	Down	280
10-Aug	1:08	70	M	Up	281
10-Aug	1:09	70	M	Down	280
10-Aug	1:14	70	M	Up	281
10-Aug	1:16	70	M	Up	282
10-Aug	1:30	70	M	Down	281
10-Aug	1:32	70	M	Down	280
10-Aug	1:32	70	M	Up	281
10-Aug	1:33	70	M	Down	280
10-Aug	1:35	70	M	Up	281
10-Aug	1:39	70	M	Down	280
10-Aug	2:04	70	M	Up	281
10-Aug	2:34	70	M	Up	282
10-Aug	2:36	70	M	Down	281
10-Aug	2:50	70	M	Up	282
10-Aug	3:19	40	M	Up	283
10-Aug	4:11	70	M	Down	282
10-Aug	5:02	70	M	Up	283
10-Aug	5:05	70	F	Up	284
10-Aug	5:12	70	M	Down	283
10-Aug	5:16	70	M	Up	284
10-Aug	5:17	90	F	Up	285
10-Aug	5:21	60	M	Up	286
10-Aug	5:25	70	M	Up	287
10-Aug	5:46	80	M	Up	288
10-Aug	6:08	80	M	Up	289
10-Aug	6:15	70	M	Down	288
10-Aug	6:18	70	M	Down	287
10-Aug	6:18	70	M	Down	286
10-Aug	6:22	70	M	Up	287

Table A-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
10-Aug	6:28	70	M	Up	288
10-Aug	6:29	70	M	Down	287
10-Aug	6:30	70	M	Down	286
10-Aug	6:35	70	M	Up	287
10-Aug	10:43	70	M	Up	288
10-Aug	12:43	70	M	Down	287
10-Aug	13:04	80	M	Up	288
10-Aug	16:26	70	M	Up	289
10-Aug	17:32	70	F	Down	288
10-Aug	20:12	70	M	Up	289
10-Aug	21:19	50	M	Up	290
10-Aug	21:42	70	M	Down	289
10-Aug	21:47	70	M	Up	290
10-Aug	22:07	70	F	Up	291
10-Aug	22:41	40	M	Up	292
10-Aug	22:45	70	M	Up	293
10-Aug	23:16	70	M	Down	292
10-Aug	23:20	80	M	Up	293
10-Aug	21:21	80	F	Up	294
10-Aug	23:21	70	M	Up	295
10-Aug	23:22	70	M	Down	294
10-Aug	23:22	80	M	Down	293
10-Aug	23:24	80	M	Up	294
11-Aug	0:11	80	M	Down	293
11-Aug	0:25	70	M	Down	292
11-Aug	1:33	70	M	Up	293
11-Aug	1:53	70	M	Down	292
11-Aug	2:09	70	M	Up	293
11-Aug	2:11	70	M	Down	292
11-Aug	2:17	70	M	Up	293
11-Aug	2:39	40	M	Down	292
11-Aug	4:28	80	M	Up	293

Table A-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
11-Aug	5:27	50	M	Up	294
11-Aug	7:37	70	M	Up	295
11-Aug	9:29	60	M	Up	296
11-Aug	12:10	70	F	Up	297
11-Aug	12:11	70	F	Down	296
11-Aug	12:19	70	F	Down	295
11-Aug	12:21	70	F	Up	296
11-Aug	12:23	70	M	Down	295
11-Aug	14:09	50	M	Down	294
11-Aug	14:21	50	M	Up	295
11-Aug	16:01	70	F	Up	296
11-Aug	16:05	70	F	Down	295
11-Aug	19:06	70	M	Up	296
11-Aug	19:08	70	M	Down	295
11-Aug	19:23	70	M	Up	296
11-Aug	19:25	80	M	Down	295
11-Aug	19:25	70	M	Down	294
11-Aug	19:28	80	M	Up	295
11-Aug	19:29	70	M	Down	294
11-Aug	19:29	70	M	Up	295
11-Aug	19:38	70	M	Up	296
11-Aug	20:09	70	M	Down	295
11-Aug	20:15	70	M	Down	294
11-Aug	20:17	70	M	Up	295
11-Aug	20:22	70	M	Down	294
11-Aug	21:12	70	M	Up	295
11-Aug	22:38	50	M	Down	294
11-Aug	22:39	50	M	Up	295
11-Aug	22:45	70	M	Down	294
11-Aug	22:52	70	M	Up	295
11-Aug	23:02	50	M	Down	294
11-Aug	23:07	70	M	Down	293

Table A-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
12-Aug	0:15	70	M	Up	294
12-Aug	0:20	70	M	Down	293
12-Aug	1:28	70	M	Down	292
12-Aug	1:52	70	F	Up	293
12-Aug	2:34	70	M	Up	294
12-Aug	2:39	70	M	Up	295
12-Aug	2:40	70	M	Down	294
12-Aug	2:53	70	M	Down	293
12-Aug	3:24	50	M	Down	292
12-Aug	3:24	50	M	Up	293
12-Aug	3:28	50	M	Down	292
12-Aug	3:35	70	M	Up	293
12-Aug	5:08	60	M	Up	294
12-Aug	6:53	40	M	Up	295
12-Aug	7:29	70	M	Up	296
12-Aug	8:42	80	F	Up	297
12-Aug	11:41	80	F	Down	296
12-Aug	16:38	70	M	Down	295
12-Aug	20:54	70	M	Down	294
12-Aug	23:34	70	M	Up	295
12-Aug	23:45	40	M	Down	294
12-Aug	23:51	70	M	Down	293
13-Aug	0:03	70	F	Up	294
13-Aug	0:06	70	M	Up	295
13-Aug	0:07	70	M	Down	294
13-Aug	0:08	70	M	Up	295
13-Aug	0:09	70	M	Down	294
13-Aug	0:27	70	M	Up	295
13-Aug	0:31	70	M	Down	294
13-Aug	0:37	80	F	Up	295
13-Aug	0:37	70	M	Up	296
13-Aug	3:13	70	M	Up	297

Table A-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
13-Aug	5:06	70	M	Down	296
13-Aug	5:12	70	M	Down	295
13-Aug	5:18	70	M	Up	296
13-Aug	11:33	80	M	Up	297
13-Aug	13:30	70	M	Up	298
13-Aug	13:32	70	M	Down	297
13-Aug	15:17	70	M	Up	298
13-Aug	18:54	70	M	Down	297
13-Aug	19:02	70	M	Up	298
13-Aug	19:03	70	M	Down	297
13-Aug	19:05	70	M	Up	298
13-Aug	19:05	70	M	Up	299
13-Aug	19:28	70	F	Up	300
13-Aug	19:28	70	F	Up	301
13-Aug	19:28	70	F	Down	300
13-Aug	19:39	70	M	Up	301
13-Aug	19:39	70	F	Up	302
13-Aug	19:39	70	F	Down	301
13-Aug	19:50	50	M	Up	302
13-Aug	19:57	70	M	Up	303
13-Aug	21:19	70	M	Down	302
14-Aug	0:38	80	F	Up	303
14-Aug	0:45	50	M	Down	302
14-Aug	0:06	70	M	Up	303
14-Aug	1:06	40	M	Up	304
14-Aug	1:50	50	M	Up	305
14-Aug	3:00	60	M	Up	306
14-Aug	4:21	50	M	Down	305
14-Aug	7:33	70	M	Down	304
14-Aug	15:31	80	M	Up	305
14-Aug	17:15	50	M	Down	304
14-Aug	18:15	70	M	Down	303

Table A-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
14-Aug	19:01	70	M	Up	304
14-Aug	19:03	70	M	Down	303
14-Aug	20:08	80	M	Up	304
14-Aug	20:13	80	M	Down	303
14-Aug	21:17	70	M	Up	304
14-Aug	22:15	40	M	Up	305
14-Aug	23:22	40	M	Down	304
14-Aug	23:26	70	M	Up	305
15-Aug	0:45	60	M	Down	304
15-Aug	1:04	70	F	Up	305
15-Aug	1:25	70	M	Up	306
15-Aug	1:26	70	M	Down	305
15-Aug	1:26	70	M	Up	306
15-Aug	1:27	70	M	Down	305
15-Aug	1:35	70	M	Up	306
15-Aug	1:40	70	M	Down	305
15-Aug	1:45	70	M	Up	306
15-Aug	1:47	70	M	Down	305
15-Aug	1:52	70	M	Up	306
15-Aug	2:00	70	M	Up	307
15-Aug	2:02	60	M	Down	306
15-Aug	2:57	60	M	Up	307
15-Aug	2:59	60	M	Down	306
15-Aug	3:28	40	M	Down	305
15-Aug	3:33	40	M	Up	306
15-Aug	4:23	50	M	Up	307
15-Aug	4:37	60	M	Up	308
15-Aug	4:46	50	M	Down	307
15-Aug	5:50	70	M	Up	308
15-Aug	6:04	50	M	Down	307
15-Aug	7:18	70	M	Down	306
15-Aug	7:36	70	M	Up	307

Table A-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
15-Aug	11:18	70	M	Up	308
15-Aug	12:23	70	M	Down	307
15-Aug	12:50	70	M	Down	306
15-Aug	13:12	70	M	Down	305
15-Aug	13:17	60	M	Down	304
15-Aug	13:18	70	M	Up	305
15-Aug	13:43	70	M	Down	304
15-Aug	14:55	60	M	Down	303
15-Aug	15:05	60	M	Up	304
15-Aug	15:08	70	M	Down	303
15-Aug	15:16	70	M	Up	304
15-Aug	15:43	70	M	Down	303
15-Aug	15:55	80	M	Up	304
15-Aug	16:12	80	M	Down	303
15-Aug	16:24	80	M	Up	304
15-Aug	16:27	60	M	Up	305
15-Aug	16:43	60	M	Down	304
15-Aug	16:55	60	M	Down	303
15-Aug	17:08	80	M	Up	304
15-Aug	17:54	50	M	Down	303
15-Aug	18:03	70	M	Down	302
15-Aug	18:13	80	M	Up	303
15-Aug	18:22	60	M	Up	304
15-Aug	18:32	60	M	Up	305
15-Aug	19:38	70	M	Up	306
15-Aug	20:08	50	M	Down	305
15-Aug	20:17	50	M	Up	306
15-Aug	22:37	80	M	Down	305
15-Aug	22:39	60	M	Down	304
15-Aug	23:59	80	M	Down	303
16-Aug	0:00	60	M	Up	304
16-Aug	0:12	80	M	Down	303

Table A-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
16-Aug	0:59	70	M	Down	302
16-Aug	1:31	70	M	Up	303
16-Aug	1:54	70	M	Up	304
16-Aug	2:05	60	M	Down	303
16-Aug	2:21	60	M	Down	302
16-Aug	4:21	70	M	Up	301
16-Aug	5:57	70	M	Down	302
16-Aug	6:03	80	M	Down	301
16-Aug	6:16	70	M	Up	302
16-Aug	6:28	60	M	Down	301
16-Aug	6:29	60	M	Up	302
16-Aug	6:33	70	M	Up	303
16-Aug	8:06	80	M	Down	302
16-Aug	8:15	70	M	Up	303
16-Aug	8:56	70	M	Down	302
16-Aug	11:51	70	M	Down	301
16-Aug	13:39	70	M	Up	302
16-Aug	13:48	70	M	Down	301
16-Aug	16:29	70	M	Up	302
16-Aug	16:42	50	M	Down	301
16-Aug	16:56	70	M	Down	300
16-Aug	17:47	70	M	Down	299
16-Aug	18:13	70	M	Up	300
16-Aug	20:10	70	M	Up	301
16-Aug	21:28	70	M	Up	302
16-Aug	21:39	70	M	Up	303
16-Aug	22:43	-	M	Down	302
16-Aug	22:43	70	M	Down	301
17-Aug	0:52	70	M	Up	302
17-Aug	1:43	70	M	Down	301
17-Aug	2:36	70	M	Up	302
17-Aug	11:24	60	M	Up	303

Table A-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
17-Aug	11:53	70	M	Down	302
17-Aug	13:19	60	M	Up	303
17-Aug	15:08	70	M	Up	304
17-Aug	15:40	70	M	Down	303
17-Aug	15:41	70	M	Up	304
17-Aug	15:55	70	M	Down	303
17-Aug	16:22	80	M	Up	304
17-Aug	16:25	80	M	Down	303
17-Aug	17:26	80	M	Down	302
17-Aug	17:43	80	M	Up	303
17-Aug	20:58	60	M	Up	304
17-Aug	21:55	60	M	Down	303
18-Aug	5:19	70	M	Down	302
18-Aug	5:32	80	M	Down	301
18-Aug	5:40	70	M	Up	302
18-Aug	5:52	70	M	Up	303
18-Aug	16:54	50	M	Down	302
Correction for outage 8/18, 17:30 to 8/19, 14:45 (+0)					302
19-Aug	15:34	50	M	Up	303
19-Aug	18:56	50	M	Down	302
19-Aug	19:07	50	M	Up	303
19-Aug	19:07	50	M	Down	302
19-Aug	19:13	50	M	Up	303
19-Aug	20:06	60	M	Up	304
19-Aug	21:23	50	M	Down	303
19-Aug	21:43	60	M	Down	302
19-Aug	22:23	50	M	Up	303
19-Aug	23:01	60	M	Up	304
20-Aug	0:48	60	M	Down	303
20-Aug	1:34	70	M	Up	304
20-Aug	2:40	60	M	Up	305
20-Aug	2:50	50	M	Down	304

Table A-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
20-Aug	3:17	60	M	Up	305
20-Aug	12:06	70	M	Down	304
20-Aug	12:48	70	M	Up	305
20-Aug	17:30	50	M	Up	306
20-Aug	18:51	70	M	Up	307
20-Aug	20:34	70	M	Down	306
20-Aug	20:49	70	M	Down	305
20-Aug	20:53	70	M	Up	306
20-Aug	20:55	70	M	Down	305
20-Aug	21:56	60	M	Up	306
20-Aug	23:03	60	M	Down	305
20-Aug	23:17	80	M	Up	306
20-Aug	23:17	50	M	Up	307
20-Aug	23:18	50	M	Down	306
20-Aug	23:19	80	M	Down	305
20-Aug	23:21	50	M	Up	306
20-Aug	23:21	50	M	Down	305
20-Aug	23:24	50	M	Up	306
20-Aug	23:26	80	M	Up	307
20-Aug	23:27	-	M	Down	306
20-Aug	23:27	50	M	Down	305
20-Aug	23:28	50	M	Up	306
20-Aug	23:31	70	M	Up	307
20-Aug	23:33	70	M	Down	306
20-Aug	23:36	50	M	Down	305
20-Aug	23:36	70	M	Up	306
20-Aug	23:36	50	M	Up	307
20-Aug	23:47	80	M	Up	308
20-Aug	23:49	80	M	Down	307
21-Aug	0:00	50	M	Down	306
21-Aug	0:06	50	M	Up	307
21-Aug	0:07	80	M	Up	308

Table A-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
21-Aug	0:13	70	M	Down	307
21-Aug	0:15	60	M	Down	306
21-Aug	0:16	50	M	Down	305
21-Aug	0:29	50	M	Up	306
21-Aug	0:32	50	M	Down	305
21-Aug	0:34	70	M	Down	304
21-Aug	0:37	70	M	Down	303
21-Aug	0:54	60	M	Down	302
21-Aug	1:14	50	M	Up	303
21-Aug	1:14	50	M	Up	304
21-Aug	1:16	50	M	Down	303
21-Aug	1:22	50	M	Down	302
21-Aug	2:19	50	M	Up	303
21-Aug	2:21	50	M	Down	302
21-Aug	2:23	50	M	Up	303
21-Aug	2:36	50	M	Down	302
21-Aug	2:52	50	M	Up	303
21-Aug	2:56	50	M	Down	302
21-Aug	3:10	50	M	Down	301
21-Aug	4:27	50	M	Up	302
21-Aug	4:30	80	M	Up	303
21-Aug	4:50	80	M	Down	302
21-Aug	5:07	50	M	Down	301
21-Aug	5:29	80	M	Up	302
21-Aug	6:21	80	M	Down	301
21-Aug	14:18	80	M	Up	302
21-Aug	14:26	70	M	Down	301
21-Aug	16:28	70	M	Up	302
21-Aug	16:48	50	M	Up	303
21-Aug	16:56	60	M	Up	304
21-Aug	17:25	50	M	Down	303
21-Aug	17:33	80	M	Up	304

Table A-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
21-Aug	17:35	50	M	Up	305
21-Aug	18:03	50	M	Down	304
21-Aug	19:46	50	M	Up	305
21-Aug	19:46	50	M	Down	304
21-Aug	19:54	50	M	Up	305
21-Aug	21:27	70	M	Down	304
21-Aug	21:45	50	M	Down	303
21-Aug	21:54	50	M	Up	304
21-Aug	21:56	70	M	Up	305
21-Aug	21:59	70	M	Down	304
21-Aug	22:01	70	M	Up	305
21-Aug	22:03	-	M	Down	304
21-Aug	22:07	70	M	Up	305
21-Aug	22:23	70	M	Up	306
22-Aug	6:16	50	M	Down	305
22-Aug	6:42	50	M	Up	306
22-Aug	12:40	70	M	Down	305
22-Aug	18:05	50	M	Up	306
22-Aug	23:36	60	M	Down	305
22-Aug	23:40	60	M	Up	306
22-Aug	23:46	60	M	Up	307
22-Aug	23:47	60	M	Down	306
23-Aug	1:04	50	M	Up	307
23-Aug	3:15	60	M	Up	308
23-Aug	7:14	80	M	Down	307
23-Aug	7:21	80	M	Up	308
23-Aug	7:22	80	M	Down	307
23-Aug	7:25	80	M	Up	308
23-Aug	13:42	50	M	Down	307
23-Aug	13:47	50	M	Up	308
23-Aug	13:48	50	M	Down	307
23-Aug	13:49	50	M	Up	308

Table A-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
23-Aug	13:50	50	M	Down	307
23-Aug	13:53	50	M	Up	308
23-Aug	14:02	80	M	Up	309
23-Aug	14:02	80	M	Down	308
23-Aug	14:30	80	M	Up	309
23-Aug	15:53	50	M	Down	308
23-Aug	15:55	50	M	Up	309
23-Aug	15:56	50	M	Down	308
23-Aug	16:02	50	M	Up	309
23-Aug	16:29	50	M	Up	310
23-Aug	16:59	50	M	Down	309
23-Aug	17:28	80	M	Down	308
23-Aug	18:15	50	M	Down	307
23-Aug	18:32	50	M	Up	308
23-Aug	20:16	80	M	Up	309
23-Aug	20:46	60	M	Down	308
23-Aug	21:39	80	M	Down	307
23-Aug	21:50	70	M	Up	308
23-Aug	21:56	50	M	Down	307
23-Aug	22:15	50	M	Down	306
23-Aug	23:49	50	M	Up	307
24-Aug	1:53	50	M	Down	306
24-Aug	2:17	70	M	Down	305
24-Aug	2:18	70	M	Up	306
24-Aug	2:19	70	M	Down	305
24-Aug	2:20	70	M	Up	306
24-Aug	2:41	60	M	Down	305
24-Aug	2:51	60	M	Up	306
24-Aug	4:10	60	M	Down	305
24-Aug	5:08	70	M	Down	304
24-Aug	5:20	60	M	Up	305
24-Aug	5:24	70	M	Up	306

Table A-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
24-Aug	8:33	70	M	Down	305
24-Aug	9:29	70	M	Up	306
24-Aug	11:43	70	M	Down	305
24-Aug	12:06	70	M	Up	306
24-Aug	12:09	70	M	Down	305
24-Aug	12:46	70	M	Up	306
24-Aug	13:49	70	M	Down	305
24-Aug	14:14	80	M	Down	304
24-Aug	14:46	80	M	Down	303
24-Aug	14:53	80	M	Up	304
24-Aug	14:53	70	M	Up	305
24-Aug	16:37	60	M	Down	304
24-Aug	16:39	60	M	Up	305
24-Aug	16:44	60	M	Down	304
24-Aug	17:35	60	M	Up	305
24-Aug	17:46	70	M	Down	304
24-Aug	22:54	70	M	Up	305
24-Aug	23:27	50	M	Down	304
25-Aug	0:56	60	M	Up	305
25-Aug	11:31	80	M	Up	306
25-Aug	16:37	70	M	Down	305
25-Aug	18:55	70	F	Up	306
25-Aug	21:24	50	M	Down	305
26-Aug	15:32	70	F	Up	306
26-Aug	15:38	70	M	Up	307
26-Aug	17:43	70	M	Down	306
26-Aug	17:54	70	M	Up	307
26-Aug	18:31	70	M	Down	306
26-Aug	18:46	70	M	Up	307
26-Aug	18:50	70	M	Down	306
26-Aug	18:57	70	M	Up	307
26-Aug	21:08	70	M	Down	306

Table A-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
26-Aug	21:29	70	M	Up	307
26-Aug	21:36	70	M	Down	306
26-Aug	21:45	70	M	Up	307
26-Aug	21:52	70	M	Down	306
26-Aug	22:13	70	M	Up	307
26-Aug	22:23	70	M	Down	306
26-Aug	22:57	70	M	Up	307
26-Aug	22:58	70	M	Down	306
26-Aug	23:02	70	M	Up	307
27-Aug	1:06	70	M	Down	306
27-Aug	6:59	70	F	Down	305
27-Aug	7:28	70	F	Up	306
27-Aug	11:15	70	F	Down	305
27-Aug	13:39	70	F	Up	306
27-Aug	17:19	70	F	Down	305
27-Aug	18:04	70	F	Up	306
27-Aug	21:00	70	F	Down	305
27-Aug	22:43	70	F	Up	306
28-Aug	0:26	70	F	Down	305
28-Aug	2:41	70	F	Up	306
28-Aug	9:08	70	F	Down	305
28-Aug	9:09	70	F	Up	306
28-Aug	12:22	70	F	Down	305
28-Aug	12:23	70	F	Up	306
28-Aug	14:21	70	F	Down	305
28-Aug	14:31	70	F	Up	306
30-Aug	6:41	70	F	Down	305
30-Aug	7:06	70	F	Up	306
30-Aug	10:26	70	F	Down	305
30-Aug	11:51	70	F	Up	306
30-Aug	20:45	70	F	Down	305
31-Aug	0:11	70	F	Up	306

Table A-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
31-Aug	1:26	70	F	Down	305
31-Aug	2:20	70	F	Up	306
31-Aug	3:02	70	F	Down	305
31-Aug	7:13	70	F	Up	306
31-Aug	17:03	70	F	Down	305
1-Sep	14:32	70	F	Up	306
1-Sep	18:27	70	F	Down	305
2-Sep	-	-	-	-	305
3-Sep	-	-	-	-	305
4-Sep	-	-	-	-	305
5-Sep	-	-	-	-	305
6-Sep	-	-	-	-	305
7-Sep	-	-	-	-	305
8-Sep	-	-	-	-	305
9-Sep	-	-	-	-	305
10-Sep	-	-	-	-	305
11-Sep	-	-	-	-	305
12-Sep	-	-	-	-	305

Table A-2. Diel movements of the spring and summer chinook salmon spawner migration in Lake Creek, by hour, in 2000.

Time (hours)	Total Movements (Up and Down)	Percent (%) Total Movements	Net Upstream Movements	Percent (%) Net Upstream Movements
0:00	107	8	11	4
1:00	90	7	8	3
2:00	72	6	14	5
3:00	46	4	8	3
4:00	59	5	9	3
5:00	44	3	6	2
6:00	54	4	-9	-3
7:00	32	3	10	4
8:00	36	3	4	1
9:00	11	1	3	1
10:00	15	1	5	2
11:00	19	2	1	0
12:00	24	2	0	0
13:00	35	3	11	4
14:00	52	4	20	7
15:00	47	4	27	10
16:00	72	6	26	9
17:00	40	3	12	4
18:00	78	6	26	9
19:00	59	5	11	4
20:00	47	4	15	5
21:00	55	4	9	3
22:00	74	6	28	10
23:00	98	8	24	9

Time – Military time (hours)

APPENDIX B

Table B-1. Run timing and direction of the spring and summer chinook salmon spawner migration in the Secesh River in 2000.

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
22-Jun	16:06	80	F	Up	1
22-Jun	16:06	70	M	Up	2
22-Jun	16:06	80	M	Up	3
22-Jun	16:34	70	F	Up	4
22-Jun	18:26	70	F	Up	5
22-Jun	20:42	80	M	Up	6
22-Jun	22:22	80	F	Up	7
22-Jun	22:34	80	F	Up	8
23-Jun	3:37	80	M	Up	9
23-Jun	3:43	70	M	Up	10
Correction for outage 6/23, 7:00 to 6/23 13:00 (+3)					13
23-Jun	17:13	70	F	Up	14
23-Jun	17:13	70	F	Up	15
23-Jun	18:09	80	F	Up	16
23-Jun	18:22	80	M	Up	17
23-Jun	18:31	80	M	Up	18
23-Jun	19:48	80	F	Up	19
23-Jun	23:59	80	F	Up	20
24-Jun	0:59	80	F	Up	21
24-Jun	1:09	80	M	Up	22
24-Jun	1:21	80	F	Up	23
24-Jun	2:58	80	M	Up	24
24-Jun	3:34	70	F	Up	25
24-Jun	3:52	80	M	Up	26
24-Jun	17:27	80	F	Up	27
24-Jun	19:50	80	F	Up	28
24-Jun	23:33	70	F	Up	29
24-Jun	23:44	70	F	Up	30
24-Jun	23:49	50	M	Up	31
25-Jun	0:32	70	F	Up	32
25-Jun	0:51	70	F	Up	33
25-Jun	1:07	70	F	Up	34
25-Jun	1:33	80	M	Up	35

Table B-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
25-Jun	2:28	80	M	Up	36
25-Jun	2:57	70	M	Up	37
25-Jun	3:09	80	M	Up	38
25-Jun	3:10	80	F	Up	39
25-Jun	3:13	70	F	Up	40
25-Jun	3:36	70	F	Up	41
25-Jun	4:46	80	M	Up	42
25-Jun	4:59	80	M	Up	43
25-Jun	5:03	80	M	Up	44
25-Jun	5:10	80	M	Up	45
25-Jun	5:11	80	M	Up	46
25-Jun	5:33	80	M	Up	47
25-Jun	5:55	80	M	Up	48
25-Jun	6:15	-	-	Up	49
25-Jun	6:15	80	M	Up	50
25-Jun	7:11	70	M	Up	51
25-Jun	7:11	70	F	Up	52
25-Jun	7:11	70	M	Up	53
25-Jun	7:15	80	F	Up	54
25-Jun	8:07	80	F	Up	55
25-Jun	9:38	80	M	Up	56
25-Jun	13:25	70	M	Up	57
25-Jun	13:42	90	M	Up	58
25-Jun	13:44	90	F	Up	59
25-Jun	13:44	80	F	Up	60
Correction for outage 6/25, 14:45 to 6/26 13:30 (+28) 6/25 (+14), 6/26 (+14)					88
26-Jun	17:22	80	F	Up	89
26-Jun	17:59	70	F	Up	90
26-Jun	18:27	40	-	Up	91
26-Jun	18:35	90	M	Up	92
26-Jun	18:36	90	F	Up	93
26-Jun	18:36	90	M	Up	94
26-Jun	18:52	80	F	Up	95
26-Jun	18:52	80	M	Up	96
26-Jun	18:52	80	M	Up	97
26-Jun	19:28	80	F	Up	98
26-Jun	19:28	80	F	Up	99

Table B-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
26-Jun	19:28	60	F	Up	100
26-Jun	19:28	60	F	Up	101
26-Jun	19:31	80	M	Up	102
26-Jun	19:32	70	F	Up	103
26-Jun	19:32	80	M	Up	104
26-Jun	19:52	80	M	Up	105
26-Jun	19:52	60	F	Up	106
26-Jun	20:26	70	F	Up	107
26-Jun	20:50	70	F	Up	108
26-Jun	21:37	80	F	Up	109
26-Jun	21:37	80	M	Up	110
26-Jun	22:58	80	F	Up	111
26-Jun	23:59	50	F	Up	112
27-Jun	0:18	80	M	Up	113
27-Jun	0:24	70	F	Up	114
27-Jun	1:13	60	F	Down	113
27-Jun	1:21	60	F	Up	114
27-Jun	1:21	40	M	Up	115
27-Jun	1:45	70	F	Up	116
27-Jun	2:16	70	F	Up	117
27-Jun	2:19	70	M	Up	118
27-Jun	2:19	80	M	Up	119
27-Jun	2:43	70	M	Up	120
27-Jun	2:50	60	M	Up	121
27-Jun	5:03	70	M	Up	122
27-Jun	5:45	70	M	Up	123
27-Jun	9:38	70	M	Up	124
27-Jun	11:26	70	M	Up	125
27-Jun	13:48	70	M	Up	126
27-Jun	15:41	90	M	Up	127
27-Jun	15:41	80	M	Up	128
27-Jun	16:51	70	F	Up	129
27-Jun	16:55	70	M	Up	130
27-Jun	17:33	80	F	Up	131
27-Jun	17:39	80	M	Up	132
27-Jun	17:46	80	M	Up	133

Table B-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
27-Jun	17:58	70	F	Up	134
27-Jun	18:27	80	F	Up	135
27-Jun	18:27	70	F	Up	136
27-Jun	18:29	70	M	Up	137
27-Jun	18:29	60	M	Up	138
27-Jun	19:13	70	F	Up	139
27-Jun	19:13	60	M	Up	140
27-Jun	19:22	60	M	Up	141
27-Jun	19:59	70	M	Up	142
27-Jun	19:59	70	M	Up	143
27-Jun	22:48	70	M	Up	144
27-Jun	23:10	70	F	Up	145
27-Jun	23:48	60	M	Up	146
27-Jun	23:48	60	M	Up	147
27-Jun	23:59	60	F	Down	146
28-Jun	0:15	60	F	Up	147
28-Jun	0:39	60	F	Up	148
28-Jun	0:40	70	-	Up	149
28-Jun	0:59	70	F	Up	150
28-Jun	1:07	60	F	Up	151
28-Jun	1:08	60	F	Up	152
28-Jun	1:18	70	F	Up	153
28-Jun	1:41	60	F	Down	152
28-Jun	2:11	60	M	Up	153
28-Jun	2:31	70	M	Up	154
28-Jun	2:34	70	M	Up	155
28-Jun	2:48	60	M	Down	154
28-Jun	3:21	60	F	Up	155
28-Jun	3:22	70	M	Up	156
28-Jun	3:51	70	M	Up	157
28-Jun	4:16	70	M	Up	158
28-Jun	4:45	70	M	Up	159
28-Jun	5:16	70	M	Up	160
28-Jun	6:13	60	M	Up	161
28-Jun	6:20	70	F	Up	162
28-Jun	6:20	70	F	Up	163

Table B-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
28-Jun	8:35	80	M	Up	164
28-Jun	8:35	80	M	Up	165
28-Jun	8:35	80	M	Up	166
28-Jun	8:35	80	M	Up	167
28-Jun	9:51	70	F	Up	168
28-Jun	14:31	70	M	Up	169
28-Jun	14:31	70	M	Up	170
28-Jun	14:31	70	M	Up	171
28-Jun	14:31	60	M	Up	172
28-Jun	15:04	80	M	Up	173
28-Jun	15:20	70	M	Up	174
28-Jun	15:32	80	M	Up	175
28-Jun	15:43	70	M	Up	176
28-Jun	15:45	70	M	Up	177
28-Jun	15:55	70	M	Up	178
28-Jun	15:55	80	M	Up	179
28-Jun	15:56	70	M	Up	180
28-Jun	16:03	70	M	Up	181
28-Jun	16:52	60	F	Up	182
28-Jun	17:05	60	M	Up	183
28-Jun	17:22	70	M	Up	184
28-Jun	17:22	50	M	Up	185
28-Jun	17:32	60	M	Up	186
28-Jun	17:32	70	M	Up	187
28-Jun	17:32	60	M	Up	188
28-Jun	17:42	80	M	Up	189
28-Jun	17:42	60	M	Up	190
28-Jun	17:48	50	F	Up	191
28-Jun	17:50	60	F	Up	192
28-Jun	18:04	70	M	Up	193
28-Jun	18:04	50	M	Up	194
28-Jun	18:04	90	M	Up	195
28-Jun	18:25	80	M	Up	196
28-Jun	19:03	-	M	Down	195
28-Jun	19:05	70	F	Down	194
28-Jun	19:05	60	M	Down	193

Table B-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
28-Jun	19:08	-	M	Down	192
28-Jun	21:50	70	F	Up	193
28-Jun	21:50	70	M	Up	194
28-Jun	21:50	60	M	Up	195
28-Jun	21:57	70	M	Up	196
28-Jun	21:57	70	M	Up	197
28-Jun	21:58	80	M	Up	198
28-Jun	22:31	70	F	Up	199
28-Jun	22:55	70	F	Up	200
28-Jun	23:06	70	F	Up	201
29-Jun	0:00	70	M	Up	202
29-Jun	0:35	60	F	Down	201
29-Jun	0:42	60	F	Up	202
29-Jun	1:17	60	F	Up	203
29-Jun	1:51	60	F	Down	202
29-Jun	5:20	60	M	Down	201
29-Jun	5:39	60	M	Down	200
29-Jun	5:40	60	F	Down	199
29-Jun	5:40	60	F	Down	198
29-Jun	5:46	60	F	Down	197
29-Jun	6:01	70	F	Down	196
29-Jun	6:01	70	F	Down	195
29-Jun	6:01	60	-	Down	194
29-Jun	6:01	80	M	Down	193
29-Jun	6:01	60	F	Down	192
29-Jun	13:15	80	M	Up	193
29-Jun	13:37	50	M	Up	194
29-Jun	17:11	70	M	Up	195
29-Jun	17:11	60	M	Up	196
29-Jun	18:41	70	F	Up	197
29-Jun	18:49	60	F	Up	198
29-Jun	18:53	60	F	Up	199
29-Jun	22:19	60	M	Up	200
29-Jun	22:35	60	F	Up	201
29-Jun	22:35	50	M	Up	202
29-Jun	23:03	40	-	Up	203

Table B-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
29-Jun	23:14	60	F	Up	204
29-Jun	23:23	70	M	Up	205
29-Jun	23:27	70	F	Up	206
29-Jun	23:30	70	F	Down	205
29-Jun	23:34	70	F	Up	206
29-Jun	23:36	70	F	Up	207
30-Jun	0:03	70	F	Up	208
30-Jun	0:11	70	F	Up	209
30-Jun	0:19	70	F	Down	208
30-Jun	0:24	60	F	Down	207
30-Jun	0:29	60	F	Up	208
30-Jun	0:35	60	F	Up	209
30-Jun	0:41	70	M	Down	208
30-Jun	0:55	70	F	Up	209
30-Jun	0:58	60	M	Up	210
30-Jun	1:08	70	F	Up	211
30-Jun	1:10	60	F	Up	212
30-Jun	1:17	60	M	Up	213
30-Jun	1:26	70	F	Up	214
30-Jun	1:30	60	M	Down	213
30-Jun	1:35	60	M	Up	214
30-Jun	1:43	60	F	Up	215
30-Jun	1:52	60	F	Up	216
30-Jun	1:57	60	M	Up	217
30-Jun	1:59	60	M	Up	218
30-Jun	2:10	60	M	Down	217
30-Jun	3:03	70	M	Up	218
30-Jun	3:08	80	F	Up	219
30-Jun	3:11	80	F	Up	220
30-Jun	3:16	80	F	Up	221
30-Jun	3:33	80	F	Up	222
30-Jun	3:39	70	M	Up	223
30-Jun	3:47	80	M	Down	222
30-Jun	3:53	70	M	Down	221
30-Jun	4:17	80	M	Up	222
30-Jun	4:38	80	M	Up	223

Table B-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
30-Jun	4:54	80	M	Up	224
30-Jun	4:55	80	M	Down	223
30-Jun	5:15	80	F	Down	222
30-Jun	5:17	80	M	Down	221
30-Jun	5:27	70	M	Down	220
30-Jun	5:27	80	M	Down	219
30-Jun	5:27	80	M	Down	218
30-Jun	5:31	80	M	Down	217
30-Jun	6:47	80	F	Up	218
30-Jun	6:47	80	M	Up	219
30-Jun	8:18	80	M	Up	220
30-Jun	10:23	80	M	Down	219
30-Jun	12:32	80	M	Up	220
30-Jun	14:05	60	F	Up	221
30-Jun	17:53	70	F	Up	222
30-Jun	17:53	70	M	Up	223
30-Jun	18:03	80	M	Up	224
30-Jun	18:04	60	M	Up	225
30-Jun	18:04	70	M	Up	226
30-Jun	18:22	70	M	Up	227
30-Jun	18:23	70	M	Up	228
30-Jun	19:26	80	F	Up	229
30-Jun	19:26	70	M	Up	230
30-Jun	19:42	60	F	Up	231
30-Jun	21:18	70	F	Up	232
30-Jun	22:33	90	M	Up	233
30-Jun	22:49	80	M	Up	234
30-Jun	23:05	70	M	Up	235
30-Jun	23:12	70	M	Down	234
30-Jun	23:15	70	F	Down	233
30-Jun	23:17	80	F	Up	234
30-Jun	23:23	80	F	Up	235
30-Jun	23:33	70	F	Up	236
30-Jun	23:50	80	F	Up	237
1-Jul	0:09	80	F	Up	238
1-Jul	0:12	80	F	Up	239

Table B-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
1-Jul	0:18	80	M	Up	240
1-Jul	0:41	-	-	Up	241
1-Jul	0:42	80	F	Up	242
1-Jul	0:43	80	M	Up	243
1-Jul	0:43	90	M	Up	244
1-Jul	0:46	70	F	Down	243
1-Jul	0:48	70	M	Up	244
1-Jul	1:00	70	-	Down	243
1-Jul	1:03	70	M	Up	244
1-Jul	1:14	70	M	Up	245
1-Jul	1:17	50	M	Up	246
1-Jul	1:39	80	M	Up	247
1-Jul	1:47	80	M	Up	248
1-Jul	1:49	80	M	Down	247
1-Jul	2:05	80	F	Down	246
1-Jul	2:31	80	M	Up	247
1-Jul	3:26	70	-	Down	246
1-Jul	3:26	80	F	Up	247
1-Jul	3:29	80	F	Up	248
1-Jul	3:33	80	F	Down	247
1-Jul	3:42	80	F	Up	248
1-Jul	3:49	80	M	Down	247
1-Jul	4:11	80	M	Down	246
1-Jul	5:39	80	F	Up	247
1-Jul	5:53	80	M	Down	246
1-Jul	6:38	80	M	Up	247
1-Jul	6:38	80	F	Up	248
1-Jul	7:37	70	F	Up	249
1-Jul	7:47	80	F	Up	250
1-Jul	7:47	-	M	Up	251
1-Jul	7:52	-	M	Up	252
1-Jul	7:53	80	F	Up	253
1-Jul	8:07	80	M	Up	254
1-Jul	8:07	80	F	Up	255
1-Jul	8:11	-	M	Up	256
1-Jul	8:16	80	M	Up	257

Table B-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
1-Jul	8:22	-	F	Up	258
1-Jul	15:03	80	F	Up	259
1-Jul	15:03	50	M	Up	260
1-Jul	21:56	80	M	Up	261
1-Jul	21:59	80	M	Up	262
1-Jul	22:34	80	M	Down	261
1-Jul	22:48	50	M	Up	262
1-Jul	22:48	70	F	Down	261
1-Jul	22:58	70	F	Up	262
1-Jul	22:58	70	M	Up	263
1-Jul	22:58	80	F	Up	264
1-Jul	23:05	80	F	Up	265
1-Jul	23:08	80	F	Up	266
1-Jul	23:16	80	M	Up	267
1-Jul	23:16	80	M	Up	268
1-Jul	23:27	80	F	Up	269
1-Jul	23:28	70	M	Up	270
1-Jul	23:37	80	M	Up	271
1-Jul	23:37	80	M	Up	272
1-Jul	23:40	80	F	Up	273
1-Jul	23:41	80	M	Up	274
2-Jul	0:06	80	M	Up	275
2-Jul	0:13	70	F	Down	274
2-Jul	0:17	80	M	Up	275
2-Jul	0:21	80	M	Up	276
2-Jul	0:22	80	M	Up	277
2-Jul	0:23	80	M	Up	278
2-Jul	0:44	70	M	Up	279
2-Jul	0:44	80	F	Up	280
2-Jul	0:54	80	M	Up	281
2-Jul	0:57	50	M	Up	282
2-Jul	0:59	80	M	Up	283
2-Jul	1:02	80	F	Up	284
2-Jul	1:13	70	M	Up	285
2-Jul	1:18	-	-	Up	286
2-Jul	1:20	80	F	Up	287

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Table B-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
2-Jul	1:26	80	M	Up	288
2-Jul	2:17	90	M	Up	289
2-Jul	2:37	50	M	Up	290
2-Jul	3:01		F	Down	289
2-Jul	3:10	70	M	Down	288
2-Jul	3:22	80	F	Up	289
2-Jul	3:44	80	F	Up	290
2-Jul	3:44	80	F	Up	291
2-Jul	3:53	80	F	Down	290
2-Jul	4:11	80	F	Up	291
2-Jul	4:23	80	F	Up	292
2-Jul	4:37	80	F	Up	293
2-Jul	4:40	70	M	Up	294
2-Jul	4:45	70	M	Down	293
2-Jul	4:56	80	M	Up	294
2-Jul	4:57	70	M	Up	295
2-Jul	5:16	80	M	Up	296
2-Jul	5:20	80	M	Up	297
2-Jul	5:20	80	M	Up	298
2-Jul	5:22	80	M	Up	299
2-Jul	5:28	70	M	Down	298
2-Jul	5:30	70	M	Up	299
2-Jul	5:30	70	M	Down	298
2-Jul	5:41	-	F	Up	299
2-Jul	5:41	80	M	Up	300
2-Jul	5:58	80	F	Up	301
2-Jul	6:15	70	M	Up	302
2-Jul	6:24	70	M	Down	301
2-Jul	7:55	80	F	Up	302
2-Jul	7:55	80	M	Up	303
2-Jul	9:13	80	F	Up	304
2-Jul	9:16	80	F	Up	305
2-Jul	9:53	90	F	Up	306
2-Jul	10:40	80	M	Up	307
2-Jul	10:53	60	F	Up	308
2-Jul	21:50	70	F	Down	307

Table B-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
2-Jul	22:11	50	M	Up	308
2-Jul	23:07	80	M	Down	307
2-Jul	23:28	70	F	Down	306
2-Jul	23:43	80	F	Down	305
2-Jul	23:47	80	M	Up	306
3-Jul	0:00	80	F	Up	307
3-Jul	0:00	-	M	Down	306
3-Jul	0:13	80	M	Up	307
3-Jul	0:32	-	M	Up	308
3-Jul	0:38	50	M	Up	309
3-Jul	1:06	80	M	Up	310
3-Jul	1:07	80	M	Up	311
3-Jul	1:10	80	F	Up	312
3-Jul	1:14	80	F	Up	313
3-Jul	1:27	70	F	Down	312
3-Jul	1:30	80	M	Up	313
3-Jul	1:33	70	F	Up	314
3-Jul	1:44	80	F	Up	315
3-Jul	1:55	80	M	Up	316
3-Jul	1:55	80	F	Up	317
3-Jul	1:57	70	F	Down	316
3-Jul	2:04	50	M	Up	317
3-Jul	2:48	80	M	Up	318
3-Jul	3:02	80	M	Down	317
3-Jul	3:21	80	M	Up	318
3-Jul	3:52	80	M	Down	317
3-Jul	5:00	80	F	Up	318
3-Jul	5:03	80	F	Down	317
3-Jul	5:25	80	M	Down	316
3-Jul	5:30	80	F	Up	317
3-Jul	5:38	80	M	Up	318
3-Jul	5:38	80	M	Up	319
3-Jul	5:39	90	M	Down	318
3-Jul	5:45	80	M	Up	319
3-Jul	5:50	80	F	Down	318
3-Jul	6:02	80	M	Down	317

Table B-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
3-Jul	6:02	80	F	Down	316
3-Jul	6:02	80	F	Down	315
3-Jul	6:22	80	M	Down	314
3-Jul	6:43	80	M	Down	313
3-Jul	9:22	80	M	Up	314
3-Jul	11:19	70	F	Up	315
3-Jul	22:31	70	F	Up	316
3-Jul	22:45	80	M	Up	317
3-Jul	22:52	50	M	Up	318
3-Jul	22:52	90	M	Up	319
3-Jul	23:41	70	M	Down	318
4-Jul	0:12	80	M	Up	319
4-Jul	0:26	80	M	Up	320
4-Jul	0:55	80	M	Up	321
4-Jul	1:01	80	M	Down	320
4-Jul	1:28	80	M	Up	321
4-Jul	1:50	70	M	Down	320
4-Jul	2:40	70	M	Up	321
4-Jul	3:03	80	F	Up	322
4-Jul	3:40	80	F	Up	323
4-Jul	3:45	80	F	Down	322
Correction for outage 7/4 11:30 to 7/5 13:30 (+3): 7/4 (+1), 7/5 (+2)					325
5-Jul	22:30	50	M	Up	326
5-Jul	22:42	80	M	Up	327
6-Jul	0:21	80	F	Up	328
6-Jul	2:49	80	F	Down	327
6-Jul	5:27	70	M	Down	326
7-Jul	0:01	50	M	Up	327
7-Jul	1:44	50	M	Down	326
7-Jul	3:00	80	M	Down	325
7-Jul	3:05	50	M	Down	324
7-Jul	3:34	80	F	Down	323
7-Jul	5:17	80	M	Down	322
7-Jul	5:29	80	M	Down	321
7-Jul	22:23	80	F	Up	322
7-Jul	22:56	80	F	Up	323
7-Jul	0:03	50	M	Up	324

Table B-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
7-Jul	0:39	50	M	Up	325
7-Jul	0:48	80	F	Up	326
7-Jul	0:56	60	M	Up	327
8-Jul	1:04	50	M	Up	328
8-Jul	1:11	80	M	Up	329
8-Jul	1:37	80	F	Up	330
8-Jul	2:16	80	F	Up	331
8-Jul	2:54	80	F	Down	330
8-Jul	3:14	90	M	Down	329
8-Jul	3:26	80	M	Up	330
8-Jul	5:30	80	M	Up	331
8-Jul	6:40	90	M	Up	332
8-Jul	8:48	80	M	Down	331
8-Jul	9:13	80	F	Up	332
8-Jul	9:20	80	M	Up	333
8-Jul	9:51	80	M	Down	332
8-Jul	20:23	80	F	Up	333
8-Jul	21:15	80	M	Up	334
8-Jul	21:53	80	M	Up	335
8-Jul	23:09	80	M	Up	336
8-Jul	23:09	70	F	Up	337
8-Jul	23:57	90	F	Up	338
8-Jul	23:57	50	M	Up	339
9-Jul	0:01	70	F	Up	340
9-Jul	0:01	70	M	Up	341
9-Jul	0:09	70	M	Up	342
9-Jul	0:11	50	M	Up	343
9-Jul	0:25	80	M	Up	344
9-Jul	0:39	80	F	Up	345
9-Jul	0:41	80	F	Up	346
9-Jul	0:42	90	M	Up	347
9-Jul	0:42	80	M	Up	348
9-Jul	0:59	50	M	Up	349
9-Jul	1:02	80	F	Up	350
9-Jul	1:08	-	-	Up	351
9-Jul	1:12	80	M	Up	352

Table B-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
9-Jul	1:15	80	M	Up	353
9-Jul	1:21	80	M	Up	354
9-Jul	1:37	70	M	Up	355
9-Jul	1:54	80	M	Up	356
9-Jul	2:02	80	M	Up	357
9-Jul	2:20	80	M	Up	358
9-Jul	2:45	80	M	Up	359
9-Jul	3:08	70	F	Up	360
9-Jul	3:24	70	F	Down	359
9-Jul	3:40	90	M	Up	360
9-Jul	3:46	80	M	Up	361
9-Jul	4:01	70	F	Up	362
9-Jul	4:09	70	F	Up	363
9-Jul	4:17	80	M	Down	362
9-Jul	4:18	70	F	Up	363
9-Jul	4:35	80	M	Up	364
9-Jul	4:57	80	M	Up	365
9-Jul	5:22	90	M	Up	366
9-Jul	5:29	80	M	Up	367
9-Jul	5:29	80	F	Up	368
9-Jul	5:42	60	F	Up	369
9-Jul	5:45	80	M	Up	370
9-Jul	5:50	90	M	Up	371
9-Jul	5:53	70	M	Up	372
9-Jul	6:00	70	M	Down	371
9-Jul	6:00	80	M	Down	370
9-Jul	8:42	90	M	Up	371
9-Jul	8:48	70	F	Up	372
9-Jul	8:48	70	F	Up	373
9-Jul	8:48	60	M	Up	374
9-Jul	20:12	80	F	Up	375
9-Jul	20:56	80	F	Up	376
9-Jul	21:36	70	F	Up	377
9-Jul	21:37	80	F	Up	378
9-Jul	21:38	-	M	Up	379
9-Jul	21:55	70	M	Up	380

Table B-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
9-Jul	21:55	80	M	Up	381
9-Jul	22:06	90	M	Up	382
9-Jul	22:09	50	M	Up	383
9-Jul	22:09	90	M	Up	384
9-Jul	22:10	60	F	Up	385
9-Jul	22:11	70	M	Up	386
10-Jul	0:02	80	F	Up	387
10-Jul	0:04	80	F	Up	388
10-Jul	0:05	80	M	Up	389
10-Jul	0:40	70	M	Down	388
10-Jul	1:07	90	M	Down	387
10-Jul	1:10	-	-	Down	386
10-Jul	1:18	-	M	Down	385
10-Jul	1:39	80	F	Down	384
10-Jul	1:43	80	F	Up	385
10-Jul	2:00	70	M	Up	386
10-Jul	2:05	80	M	Up	387
10-Jul	2:07	70	M	Up	388
10-Jul	2:10	80	M	Up	389
10-Jul	2:12	80	F	Down	388
10-Jul	2:27	80	F	Up	389
10-Jul	2:39	80	M	Up	390
10-Jul	2:51	80	M	Up	391
10-Jul	3:25	80	M	Up	392
10-Jul	3:34	80	M	Up	393
10-Jul	3:46	80	M	Down	392
10-Jul	4:06	80	M	Up	393
10-Jul	5:21	90	M	Up	394
10-Jul	5:37	70	M	Down	393
10-Jul	5:57	70	M	Up	394
10-Jul	5:59	70	M	Down	393
10-Jul	6:50	80	F	Down	392
10-Jul	22:31	80	M	Down	391
10-Jul	23:37	70	M	Down	390
11-Jul	0:16	80	M	Up	391
11-Jul	0:19	80	M	Up	392

Table B-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
11-Jul	0:34	50	M	Up	393
11-Jul	0:34	50	M	Up	394
11-Jul	0:54	70	M	Down	393
11-Jul	0:57	50	M	Up	394
11-Jul	1:12	60	F	Down	393
11-Jul	1:20	70	M	Up	394
11-Jul	1:20	80	F	Up	395
11-Jul	1:38	50	M	Up	396
11-Jul	1:39	70	M	Up	397
11-Jul	1:46	50	M	Up	398
11-Jul	1:47	80	F	Up	399
11-Jul	1:48	60	M	Down	398
11-Jul	2:35	80	F	Down	397
11-Jul	2:38	70	F	Down	396
11-Jul	2:38	70	F	Down	395
11-Jul	2:39	80	M	Down	394
11-Jul	2:40	80	M	Down	393
11-Jul	2:52	70	F	Up	394
11-Jul	3:07	80	F	Up	395
11-Jul	4:24	70	F	Up	396
11-Jul	5:10	70	M	Up	397
11-Jul	5:28	80	M	Down	396
11-Jul	5:31	70	M	Down	395
11-Jul	5:31	60	F	Up	396
11-Jul	5:53	70	M	Down	395
11-Jul	21:33	60	F	Up	394
11-Jul	21:43	70	F	Up	395
11-Jul	22:55	80	F	Down	394
11-Jul	23:08	60	F	Up	395
11-Jul	23:33	60	F	Up	396
12-Jul	12:10	80	M	Up	397
12-Jul	12:30	80	M	Up	398
12-Jul	12:58	70	F	Up	399
12-Jul	1:01	70	F	Up	400
12-Jul	1:19	70	F	Up	401
12-Jul	1:58	70	F	Down	402

Table B-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
12-Jul	2:12	80	M	Down	401
12-Jul	2:47	70	M	Up	402
12-Jul	3:45	70	F	Up	403
12-Jul	3:46	70	M	Up	404
12-Jul	3:54	70	F	Down	403
12-Jul	4:52	70	M	Up	404
12-Jul	6:27	70	M	Down	403
12-Jul	6:27	70	M	Down	402
12-Jul	6:27	70	M	Down	401
12-Jul	9:15	70	F	Up	402
12-Jul	9:15	70	F	Up	403
12-Jul	20:59	70	M	Down	402
13-Jul	0:02	70	M	Down	401
13-Jul	0:43	70	F	Down	400
13-Jul	0:43	60	M	Down	399
13-Jul	0:50	70	F	Up	400
13-Jul	1:01	60	M	Up	401
13-Jul	1:34	60	M	Down	400
13-Jul	1:22	70	M	Down	399
13-Jul	1:57	70	M	Down	398
13-Jul	2:32	70	M	Up	399
13-Jul	2:37	70	M	Down	398
13-Jul	2:44	50	M	Up	399
13-Jul	3:21	50	M	Down	398
13-Jul	3:31	70	F	Up	399
13-Jul	3:32	70	M	Down	398
13-Jul	4:08	60	M	Up	399
13-Jul	4:32	70	F	Up	400
13-Jul	4:32	70	F	Up	401
13-Jul	4:33	80	M	Up	402
13-Jul	4:46	70	F	Up	403
13-Jul	5:17	70	F	Down	402
13-Jul	18:24	80	F	Up	403
13-Jul	18:36	80	F	Up	404
13-Jul	20:32	70	M	Down	403
13-Jul	20:39	70	M	Up	404

Table B-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
13-Jul	21:20	70	F	Up	405
13-Jul	21:21	70	F	Up	406
13-Jul	22:20	70	M	Down	405
13-Jul	22:24	70	M	Down	404
13-Jul	23:02	70	M	Down	403
13-Jul	23:03	60	M	Up	404
13-Jul	23:44	60	M	Up	405
14-Jul	0:02	70	M	Up	406
14-Jul	0:18	70	M	Up	407
14-Jul	0:28	70	M	Up	408
14-Jul	0:57	60	M	Down	407
14-Jul	1:22	70	F	Up	408
14-Jul	1:44	70	M	Up	409
14-Jul	1:56	50	M	Up	410
14-Jul	1:56	70	F	Up	411
14-Jul	1:57	70	M	Up	412
14-Jul	1:57	60	F	Up	413
14-Jul	2:03	70	F	Up	414
14-Jul	2:08	70	M	Up	415
14-Jul	2:08	70	F	Up	416
14-Jul	2:09	70	F	Up	417
14-Jul	2:09	70	F	Up	418
14-Jul	2:51	70	M	Up	419
14-Jul	3:19	70	F	Up	420
14-Jul	3:45	50	M	Up	421
14-Jul	4:04	50	M	Down	420
14-Jul	4:41	70	M	Down	419
14-Jul	4:59	60	M	Down	418
14-Jul	5:38	70	M	Down	417
14-Jul	15:56	60	M	Up	418
14-Jul	16:29	70	M	Up	419
14-Jul	16:29	70	M	Up	420
14-Jul	20:32	70	M	Up	421
14-Jul	22:08	70	M	Down	420
14-Jul	22:12	80	M	Down	419
15-Jul	0:25	70	M	Up	420

Table B-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
15-Jul	0:30	40	M	Up	421
15-Jul	0:30	70	F	Up	422
15-Jul	0:40	70	M	Up	423
15-Jul	0:49	70	F	Up	424
15-Jul	0:59	50	F	Up	425
15-Jul	1:02	70	F	Up	426
15-Jul	1:05	70	F	Up	427
15-Jul	1:15	70	F	Up	428
15-Jul	1:21	50	M	Up	429
15-Jul	1:26	50	M	Up	430
15-Jul	1:27	70	F	Up	431
15-Jul	1:30	60	F	Up	432
15-Jul	1:30	70	M	Up	433
15-Jul	1:31	60	F	Up	434
15-Jul	1:36	60	F	Up	435
15-Jul	2:56	70	M	Down	434
15-Jul	3:07	50	F	Up	435
15-Jul	3:11	80	M	Up	436
15-Jul	3:14	70	F	Up	437
15-Jul	3:17	60	F	Up	438
15-Jul	3:34	70	M	Down	437
15-Jul	4:34	70	F	Up	438
15-Jul	6:13	70	M	Up	439
15-Jul	6:32	70	F	Up	440
16-Jul	22:54	60	M	Down	439
16-Jul	0:29	80	F	Up	440
16-Jul	0:40	80	F	Down	439
16-Jul	1:57	70	M	Up	440
16-Jul	2:20	50	F	Up	441
16-Jul	2:20	70	F	Up	442
16-Jul	2:46	70	M	Down	441
16-Jul	2:47	70	M	Down	440
16-Jul	3:16	70	F	Down	439
16-Jul	3:18	70	F	Down	438
16-Jul	3:22	70	F	Down	437
16-Jul	3:22	60	-	Down	436

Table B-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
16-Jul	3:29	80	M	Down	435
16-Jul	3:52	60	F	Up	436
16-Jul	4:27	70	M	Down	435
16-Jul	4:28	80	M	Down	434
16-Jul	4:29	70	M	Up	435
16-Jul	5:50	70	F	Down	434
16-Jul	16:28	70	F	Up	435
16-Jul	22:04	60	F	Up	436
16-Jul	22:45	80	F	Up	437
16-Jul	23:59	80	F	Up	438
17-Jul	0:06	50	F	Up	439
17-Jul	0:26	50	F	Up	440
17-Jul	0:41	60	F	Up	441
17-Jul	1:05	70	F	Down	440
17-Jul	1:15	60	F	Up	441
17-Jul	1:21	50	F	Up	442
17-Jul	2:07	70	M	Down	441
17-Jul	11:07	80	F	Up	442
17-Jul	22:25	60	F	Up	443
17-Jul	22:33	60	F	Up	444
17-Jul	23:17	60	F	Down	443
18-Jul	1:10	60	F	Up	444
18-Jul	2:40	60	F	Down	443
18-Jul	2:50	50	F	Up	444
18-Jul	4:50	80	F	Down	443
18-Jul	5:09	70	M	Up	444
18-Jul	5:13	60	F	Up	445
18-Jul	21:00	70	M	Down	444
18-Jul	22:03	60	M	Up	445
18-Jul	23:29	80	F	Up	446
18-Jul	23:43	60	F	Up	447
19-Jul	1:04	70	M	Up	448
19-Jul	1:47	80	M	Up	449
19-Jul	1:50	80	F	Up	450
19-Jul	2:51	60	M	Up	451
19-Jul	4:55	70	M	Up	452

Table B-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
19-Jul	5:06	70	F	Up	453
19-Jul	5:20	80	M	Up	454
19-Jul	5:57	70	M	Up	455
19-Jul	6:11	70	F	Down	454
19-Jul	9:57	70	F	Up	455
19-Jul	10:38	80	M	Up	456
19-Jul	11:32	70	M	Up	457
19-Jul	11:32	50	M	Up	458
19-Jul	15:04	70	M	Down	457
19-Jul	18:05	80	M	Up	458
19-Jul	18:06	80	M	Up	459
19-Jul	23:12	80	M	Up	460
19-Jul	23:22	80	-	Up	461
19-Jul	23:27	-	-	Up	462
19-Jul	23:49	-	-	Up	463
	Correction for outage 7/20 0:00 to 7/20 7:00 (+3)				466
20-Jul	23:44	80	M	Up	467
21-Jul	0:29	80	F	Up	468
21-Jul	2:29	70	M	Up	469
21-Jul	2:45	50	M	Up	470
21-Jul	22:04	50	M	Up	471
21-Jul	23:17	80	M	Up	472
21-Jul	23:52	50	M	Up	473
22-Jul	1:32	70	M	Down	472
22-Jul	4:48	-	M	Up	473
22-Jul	5:35	-	M	Down	472
22-Jul	6:36	-	M	Up	473
22-Jul	21:56	70	F	Up	474
23-Jul	0:13	50	M	Up	475
23-Jul	0:32	80	F	Up	476
23-Jul	1:40	80	M	Up	477
23-Jul	1:43	70	F	Down	476
23-Jul	1:47	80	F	Up	477
23-Jul	1:51	70	F	Down	476
23-Jul	1:57	80	M	Down	475
23-Jul	2:14	50	M	Down	474
23-Jul	2:21	90	M	Up	475

Table B-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
23-Jul	3:27	80	M	Up	476
23-Jul	3:37	50	M	Up	477
23-Jul	9:36	80	M	Up	478
23-Jul	9:40	80	M	Down	477
23-Jul	9:40	80	M	Up	478
23-Jul	9:41	80	M	Down	477
23-Jul	9:43	80	M	Up	478
23-Jul	11:11	50	M	Up	479
23-Jul	11:12	50	M	Down	478
23-Jul	11:13	50	M	Up	479
23-Jul	11:20	50	M	Down	478
23-Jul	11:55	50	M	Up	479
23-Jul	15:26	70	F	Up	480
23-Jul	15:37	50	M	Up	481
23-Jul	15:37	50	M	Up	482
23-Jul	17:48	50	M	Down	481
23-Jul	18:15	80	F	Up	482
23-Jul	19:30	50	M	Up	483
23-Jul	19:46	80	F	Down	482
23-Jul	19:53	50	M	Up	483
23-Jul	21:47	50	M	Up	484
23-Jul	21:50	80	F	Up	485
23-Jul	22:00	50	M	Up	486
23-Jul	22:15	80	M	Up	487
23-Jul	23:35	-	M	Down	486
24-Jul	0:27	50	M	Up	487
24-Jul	1:14	80	M	Up	488
24-Jul	1:17	90	M	Up	489
24-Jul	1:25	50	M	Up	490
24-Jul	5:21	80	M	Up	491
24-Jul	7:22	-	M	Up	492
24-Jul	21:07	80	M	Down	491
25-Jul	1:12	80	M	Down	490
25-Jul	3:13	80	M	Up	491
25-Jul	16:26	80	F	Up	492
25-Jul	16:50	40	M	Down	491

Table B-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
25-Jul	17:09	50	M	Down	490
25-Jul	17:10	50	M	Up	491
25-Jul	17:21	50	M	Down	490
25-Jul	22:33	60	F	Up	491
26-Jul	1:11	70	M	Up	492
26-Jul	1:21	70	M	Down	491
26-Jul	1:24	70	M	Up	492
26-Jul	1:44	80	F	Up	493
26-Jul	1:46	80	F	Down	492
26-Jul	1:47	80	F	Up	493
26-Jul	6:47	50	M	Up	494
26-Jul	11:18	40	M	Down	493
26-Jul	12:19	50	M	Down	492
26-Jul	12:25	50	M	Up	493
26-Jul	12:30	50	M	Down	492
26-Jul	13:03	50	M	Up	493
26-Jul	13:11	50	M	Down	492
26-Jul	13:52	50	M	Up	493
26-Jul	14:10	50	M	Down	492
26-Jul	21:59	50	M	Up	493
26-Jul	22:30	80	F	Up	494
26-Jul	22:35	70	F	Up	495
27-Jul	0:32	80	F	Up	496
27-Jul	4:20	80	M	Up	497
27-Jul	4:43	60	F	Up	498
27-Jul	5:41	50	M	Down	497
27-Jul	5:48	50	M	Up	498
27-Jul	5:56	30	M	Down	497
27-Jul	5:57	80	M	Up	498
27-Jul	6:09	50	M	Down	497
27-Jul	10:31	80	F	Up	498
27-Jul	10:31	50	M	Up	499
27-Jul	11:36	80	M	Up	500
27-Jul	17:59	90	M	Up	501
27-Jul	21:27	80	F	Up	502
27-Jul	22:19	70	F	Up	503

Table B-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
27-Jul	22:33	50	M	Up	504
27-Jul	23:55	50	M	Up	505
28-Jul	0:48	70	M	Up	506
28-Jul	2:19	80	F	Up	507
28-Jul	2:22	80	F	Up	508
28-Jul	2:56	80	M	Up	509
28-Jul	3:09	70	M	Up	510
28-Jul	3:51	70	M	Down	509
28-Jul	4:49	80	F	Up	510
28-Jul	6:16	100	M	Up	511
29-Jul	0:55	70	F	Up	512
29-Jul	1:36	70	M	Up	513
29-Jul	4:50	70	M	Up	514
29-Jul	21:58	60	F	Up	515
30-Jul	1:31	40	M	Down	514
30-Jul	1:48	70	M	Up	515
30-Jul	1:52	40	M	Up	516
30-Jul	1:55	70	M	Down	515
30-Jul	1:58	70	M	Up	513
30-Jul	2:00	70	F	Down	515
30-Jul	2:00	40	M	Down	514
30-Jul	2:25	80	M	Up	515
30-Jul	3:07	70	F	Up	516
30-Jul	3:22	80	M	Up	517
30-Jul	3:53	70	F	Up	518
30-Jul	4:12	40	M	Up	519
30-Jul	4:59	70	M	Down	518
30-Jul	22:48	70	F	Up	519
30-Jul	23:27	60	M	Up	520
30-Jul	23:53	80	M	Up	521
31-Jul	0:26	50	M	Up	522
31-Jul	1:50	90	M	Down	521
31-Jul	2:02	90	M	Up	522
31-Jul	2:13	90	M	Down	521
31-Jul	2:22	90	M	Up	522
31-Jul	2:26	90	M	Down	521

Table B-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
31-Jul	2:33	90	M	Up	522
31-Jul	5:38	60	M	Up	523
31-Jul	21:48	60	M	Down	522
31-Jul	22:10	80	M	Up	523
31-Jul	23:11	80	F	Up	524
31-Jul	23:19	50	M	Down	523
31-Jul	23:23	80	F	Up	524
31-Jul	23:41	70	M	Down	523
1-Aug	0:54	80	M	Up	524
1-Aug	1:00	90	M	Up	525
1-Aug	2:20	80	M	Up	526
1-Aug	2:29	80	M	Up	527
1-Aug	3:29	80	M	Up	528
1-Aug	4:14	50	M	Up	529
1-Aug	4:18	70	M	Up	530
1-Aug	4:32	80	F	Down	529
1-Aug	4:40	80	F	Down	528
1-Aug	4:46	80	F	Down	527
1-Aug	5:04	70	M	Up	528
1-Aug	5:05	80	M	Down	527
1-Aug	5:44	80	M	Down	526
1-Aug	6:37	70	M	Up	527
1-Aug	6:48	80	M	Up	528
1-Aug	6:48	60	M	Up	529
1-Aug	21:34	80	M	Up	530
1-Aug	21:38	60	M	Up	531
1-Aug	21:54	70	F	Up	532
1-Aug	22:05	80	M	Up	533
1-Aug	22:51	80	M	Up	534
1-Aug	23:30	60	M	Up	535
2-Aug	1:36	70	M	Up	536
2-Aug	1:46	70	M	Down	535
2-Aug	1:49	70	M	Up	536
2-Aug	1:56	70	M	Down	535
2-Aug	2:26	80	M	Down	534
2-Aug	2:54	80	M	Up	535

Table B-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
2-Aug	3:38	70	F	Down	534
2-Aug	4:10	80	M	Down	533
2-Aug	4:28	80	M	Up	534
2-Aug	4:32	80	M	Down	533
2-Aug	5:51	60	M	Up	534
2-Aug	5:57	80	M	Up	535
2-Aug	6:24	80	F	Down	534
2-Aug	8:24	70	F	Up	535
2-Aug	8:28	70	F	Down	534
2-Aug	9:10	70	F	Up	535
2-Aug	9:20	70	F	Down	534
2-Aug	9:58	70	F	Up	535
2-Aug	22:24	90	M	Up	536
2-Aug	22:50	60	M	Up	537
2-Aug	23:12	70	M	Up	538
3-Aug	0:25	80	M	Down	537
3-Aug	0:33	90	M	Up	538
3-Aug	0:50	80	M	Up	539
3-Aug	1:08	60	M	Up	540
3-Aug	1:44	80	M	Down	539
3-Aug	1:51	80	M	Up	540
3-Aug	1:55	80	M	Up	541
3-Aug	2:02	-	M	Up	542
3-Aug	2:14	80	M	Down	541
3-Aug	2:22	50	M	Up	542
3-Aug	2:59	80	M	Up	543
3-Aug	3:00	80	M	Down	542
3-Aug	3:02	80	M	Up	543
3-Aug	3:26	80	M	Up	544
3-Aug	3:27	70	M	Up	545
3-Aug	3:39	70	M	Down	544
3-Aug	3:39	80	M	Down	543
3-Aug	3:44	70	F	Up	544
3-Aug	3:46	80	M	Down	543
3-Aug	3:53	70	M	Up	544
3-Aug	5:24	90	M	Up	545

Table B-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
3-Aug	21:43	60	M	Up	546
3-Aug	21:46	80	M	Up	547
4-Aug	0:55	70	M	Up	548
4-Aug	1:15	80	M	Down	547
4-Aug	1:42	80	F	Up	548
4-Aug	1:45	80	M	Up	549
4-Aug	1:52	80	M	Down	548
4-Aug	2:04	80	M	Up	549
4-Aug	2:18	50	M	Up	550
4-Aug	3:01	80	M	Up	551
4-Aug	4:25	80	M	Down	550
4-Aug	6:07	80	F	Up	551
4-Aug	6:11	80	M	Up	552
4-Aug	6:55	80	M	Down	551
4-Aug	7:05	80	M	Up	552
4-Aug	16:29	70	F	Up	553
4-Aug	21:56	80	M	Up	554
4-Aug	22:13	70	F	Up	555
4-Aug	23:30	80	M	Down	554
5-Aug	0:17	70	M	Up	555
5-Aug	1:31	50	M	Up	556
5-Aug	1:48	80	M	Up	557
5-Aug	2:30	80	F	Up	558
5-Aug	2:30	80	M	Up	559
5-Aug	2:39	80	M	Up	560
5-Aug	3:26	80	F	Up	561
5-Aug	3:46	60	M	Up	562
5-Aug	5:37	50	M	Down	561
5-Aug	6:05	80	M	Up	562
5-Aug	22:50	60	M	Up	563
5-Aug	23:38	70	M	Up	564
6-Aug	2:27	70	M	Up	565
6-Aug	2:28	80	M	Up	566
6-Aug	3:19	90	M	Up	567
6-Aug	3:27	90	M	Down	566
6-Aug	3:34	90	M	Up	567

Table B-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
6-Aug	3:44	80	F	Up	568
6-Aug	3:51	60	M	Up	569
6-Aug	4:04	60	M	Down	568
6-Aug	4:29	80	M	Up	569
6-Aug	4:50	60	M	Up	570
6-Aug	5:19	60	M	Down	569
6-Aug	7:07	70	M	Up	570
6-Aug	23:07	80	F	Up	571
6-Aug	23:24	80	F	Up	572
7-Aug	0:10	50	M	Up	573
7-Aug	1:46	60	M	Down	527
7-Aug	1:53	60	M	Up	573
7-Aug	4:05	70	M	Up	574
7-Aug	4:10	80	M	Up	575
7-Aug	4:29	70	M	Up	576
7-Aug	4:34	70	M	Down	575
7-Aug	5:27	80	M	Up	576
7-Aug	5:34	70	M	Down	575
7-Aug	7:04	80	M	Up	576
7-Aug	20:13	70	M	Up	577
7-Aug	20:16	80	M	Up	578
7-Aug	23:36	60	M	Down	577
8-Aug	0:03	60	M	Down	576
8-Aug	0:12	80	M	Up	577
8-Aug	0:29	80	M	Down	576
8-Aug	1:17	70	F	Up	577
8-Aug	1:19	80	F	Down	576
8-Aug	1:23	80	F	Up	577
8-Aug	1:24	60	M	Up	578
8-Aug	1:39	80	F	Down	577
8-Aug	1:45	80	F	Up	578
8-Aug	1:51	80	M	Up	579
8-Aug	2:13	70	M	Up	580
8-Aug	2:22	80	M	Up	581
8-Aug	2:53	50	M	Up	582
8-Aug	3:34	70	M	Down	581

Table B-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
8-Aug	3:41	80	F	Up	582
8-Aug	3:41	80	M	Up	583
8-Aug	3:54	80	M	Down	582
8-Aug	4:23	80	M	Up	583
8-Aug	4:45	70	M	Down	582
8-Aug	5:18	70	M	Down	581
8-Aug	6:55	70	M	Up	582
8-Aug	7:05	60	M	Up	583
8-Aug	20:35	70	M	Up	584
8-Aug	21:20	70	M	Down	583
8-Aug	22:02	70	M	Down	582
8-Aug	22:26	60	M	Up	583
9-Aug	1:53	70	M	Up	584
9-Aug	2:44	80	M	Up	585
9-Aug	3:34	70	F	Up	586
9-Aug	4:35	40	M	Down	585
9-Aug	4:40	50	M	Up	586
9-Aug	5:11	60	F	Up	587
9-Aug	5:17	50	M	Up	588
9-Aug	5:44	60	F	Down	587
9-Aug	6:49	50	M	Up	588
9-Aug	6:50	50	M	Down	587
9-Aug	7:21	60	M	Up	588
9-Aug	7:21	80	M	Up	589
9-Aug	11:46	80	M	Up	590
9-Aug	11:46	50	M	Up	591
9-Aug	20:19	50	M	Up	592
9-Aug	21:27	80	F	Up	593
9-Aug	21:32	70	M	Up	594
9-Aug	21:37	80	M	Up	595
9-Aug	23:12	70	F	Up	596
9-Aug	23:42	50	M	Up	597
9-Aug	23:59	80	M	Down	596
10-Aug	0:06	80	F	Up	597
10-Aug	0:26	70	F	Up	598
10-Aug	0:55	80	M	Up	599

Table B-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
10-Aug	3:24	60	M	Up	600
10-Aug	3:40	80	M	Up	601
10-Aug	4:42	80	F	Up	602
10-Aug	5:06	80	M	Up	603
10-Aug	5:08	70	M	Up	604
10-Aug	5:15	80	M	Down	603
10-Aug	5:19	80	M	Up	604
10-Aug	6:06	50	M	Down	603
10-Aug	6:13	80	M	Down	602
10-Aug	7:50	80	M	Down	601
10-Aug	7:54	80	M	Up	602
10-Aug	7:56	80	M	Down	601
10-Aug	8:25	80	M	Up	602
10-Aug	9:28	80	M	Up	603
10-Aug	9:41	80	M	Down	602
10-Aug	9:44	60	M	Down	601
10-Aug	9:46	80	F	Up	602
10-Aug	9:46	50	M	Up	603
10-Aug	9:49	80	M	Up	604
10-Aug	10:04	80	M	Up	605
10-Aug	10:08	50	M	Down	604
10-Aug	11:21	60	M	Down	603
10-Aug	14:32	80	M	Down	602
10-Aug	14:42	90	M	Up	603
10-Aug	16:12	80	M	Down	602
10-Aug	17:26	80	M	Up	603
10-Aug	18:40	50	M	Up	604
10-Aug	21:29	50	M	Up	605
10-Aug	21:54	60	M	Up	606
10-Aug	22:25	80	M	Up	607
10-Aug	22:50	70	M	Down	606
10-Aug	22:52	60	M	Down	605
10-Aug	23:46	60	M	Up	606
11-Aug	0:15	80	M	Down	605
11-Aug	0:34	50	M	Down	604
11-Aug	0:44	50	M	Up	605

Table B-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
11-Aug	1:04	70	M	Down	604
11-Aug	1:41	70	M	Up	605
11-Aug	2:00	80	M	Up	606
11-Aug	2:16	80	F	Up	607
11-Aug	2:22	70	M	Up	608
11-Aug	3:22	80	F	Up	609
11-Aug	3:35	50	M	Up	610
11-Aug	3:39	70	M	Up	611
11-Aug	3:46	70	M	Up	612
11-Aug	4:48	70	M	Down	611
11-Aug	4:48	70	M	Down	610
11-Aug	4:56	80	M	Down	609
11-Aug	4:57	70	F	Up	610
11-Aug	4:58	60	M	Up	611
11-Aug	5:37	70	M	Up	612
11-Aug	7:02	70	M	Up	613
11-Aug	7:19	80	F	Up	614
11-Aug	7:19	50	M	Up	615
11-Aug	9:04	70	M	Down	614
11-Aug	9:00	70	M	Up	615
11-Aug	9:05	70	M	Down	614
11-Aug	10:50	90	M	Down	613
11-Aug	11:21	70	M	Down	612
11-Aug	11:30	70	M	Up	613
11-Aug	11:44	80	M	Up	614
11-Aug	15:57	80	M	Up	615
11-Aug	20:21	70	M	Up	616
11-Aug	20:26	80	M	Up	617
11-Aug	20:46	70	M	Down	616
11-Aug	21:13	70	M	Up	617
11-Aug	21:43	50	M	Up	618
11-Aug	23:28	60	M	Up	619
12-Aug	0:44	50	M	Down	618
12-Aug	0:52	70	M	Up	619
12-Aug	1:04	80	F	Up	620
12-Aug	1:05	70	F	Up	621

Table B-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
12-Aug	1:05	50	M	Up	622
12-Aug	1:58	70	M	Down	621
12-Aug	2:01	50	M	Down	620
12-Aug	2:02	70	M	Down	619
12-Aug	2:09	70	M	Up	620
12-Aug	2:15	60	M	Up	621
12-Aug	2:28	60	M	Up	622
12-Aug	2:37	70	M	Up	623
12-Aug	2:49	70	M	Up	624
12-Aug	3:26	70	M	Up	625
12-Aug	3:44	70	M	Up	626
12-Aug	4:51	50	M	Down	625
12-Aug	4:55	70	M	Up	626
12-Aug	5:15	70	M	Up	627
12-Aug	5:27	50	M	Up	628
12-Aug	6:04	80	F	Up	629
12-Aug	6:04	70	M	Up	630
12-Aug	7:17	70	M	Down	629
12-Aug	7:30	70	M	Up	630
12-Aug	12:55	70	M	Down	629
12-Aug	21:45	80	M	Down	628
12-Aug	21:56	50	M	Up	629
12-Aug	21:59	80	M	Up	630
12-Aug	22:01	70	F	Up	631
12-Aug	22:39	70	M	Down	630
12-Aug	22:45	50	M	Down	629
12-Aug	23:40	70	M	Down	628
12-Aug	23:42	70	M	Up	629
12-Aug	23:58	70	M	Down	628
13-Aug	0:21	50	M	Down	627
13-Aug	0:30	80	M	Up	628
13-Aug	0:36	80	F	Up	629
13-Aug	0:54	70	F	Up	630
13-Aug	0:57	50	M	Up	631
13-Aug	1:26	70	M	Down	630
13-Aug	1:37	80	M	Up	631

Table B-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
13-Aug	2:05	80	M	Up	632
13-Aug	2:25	80	M	Down	631
13-Aug	2:34	70	M	Up	632
13-Aug	2:32	50	M	Up	633
13-Aug	3:16	80	M	Up	634
13-Aug	3:18	60	M	Down	633
13-Aug	3:33	50	M	Up	634
13-Aug	3:51	70	M	Up	635
13-Aug	4:47	70	M	Up	636
13-Aug	5:11	70	M	Up	637
13-Aug	5:44	80	M	Up	638
13-Aug	5:50	50	M	Down	637
13-Aug	7:10	80	M	Up	638
13-Aug	8:18	80	M	Down	637
13-Aug	8:25	80	M	Up	638
13-Aug	8:25	80	M	Down	637
13-Aug	8:51	80	F	Up	638
13-Aug	9:17	80	M	Down	637
13-Aug	10:43	80	M	Up	638
13-Aug	13:35	80	M	Down	637
13-Aug	15:35	70	M	Down	636
13-Aug	15:35	70	M	Up	637
13-Aug	17:00	70	M	Down	636
13-Aug	17:54	80	M	Up	637
13-Aug	20:39	80	M	Up	638
13-Aug	21:50	50	M	Down	637
13-Aug	22:23	50	M	Up	638
13-Aug	22:45	70	F	Down	637
13-Aug	22:45	80	M	Down	636
14-Aug	0:02	70	M	Up	637
14-Aug	0:05	50	M	Down	636
14-Aug	0:22	70	F	Up	637
14-Aug	0:31	80	F	Up	638
14-Aug	0:33	80	M	Up	639
14-Aug	0:41	70	M	Up	640
14-Aug	1:06	80	M	Up	641

Table B-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
14-Aug	1:10	60	M	Down	640
14-Aug	1:33	50	M	Down	639
14-Aug	1:35	50	M	Up	640
14-Aug	1:51	-	M	Down	639
14-Aug	1:57	80	M	Up	640
14-Aug	2:18	80	M	Up	641
14-Aug	2:19	50	M	Up	642
14-Aug	2:31	80	M	Up	643
14-Aug	2:45	70	M	Up	644
14-Aug	3:30	80	M	Up	645
14-Aug	4:11	80	M	Up	646
14-Aug	4:33	80	M	Up	647
14-Aug	4:59	70	F	Up	648
14-Aug	6:10	80	M	Up	649
14-Aug	6:18	70	M	Up	650
14-Aug	6:28	80	M	Down	649
14-Aug	6:31	80	M	Up	650
14-Aug	6:42	80	F	Up	651
14-Aug	7:20	70	M	Down	650
14-Aug	8:09	80	M	Down	649
14-Aug	8:28	80	M	Up	650
14-Aug	9:07	80	M	Down	649
14-Aug	14:36	80	M	Down	648
14-Aug	14:38	80	M	Up	649
14-Aug	15:37	80	M	Up	650
14-Aug	16:08	70	M	Up	651
14-Aug	16:16	80	F	Up	652
14-Aug	16:16	-	M	Down	651
14-Aug	16:16	70	M	Up	652
14-Aug	16:26	70	F	Up	653
14-Aug	16:38	80	M	Down	652
14-Aug	16:39	80	M	Up	653
14-Aug	16:39	-	M	Up	654
14-Aug	16:52	70	M	Down	653
14-Aug	16:54	70	M	Down	652
14-Aug	16:59	70	M	Up	653

Table B-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
14-Aug	17:15	70	F	Up	654
14-Aug	17:34	70	M	Up	655
14-Aug	17:38	70	M	Down	654
14-Aug	17:39	70	M	Up	655
14-Aug	19:17	70	M	Down	654
14-Aug	19:17	70	M	Up	655
14-Aug	20:29	80	M	Down	654
14-Aug	20:54	80	M	Down	653
14-Aug	20:57	80	M	Up	654
14-Aug	21:34	80	M	Up	655
14-Aug	21:47	60	M	Up	656
14-Aug	21:57	80	M	Up	657
14-Aug	22:04	80	M	Down	656
14-Aug	22:20	60	M	Up	657
14-Aug	22:21	80	M	Up	658
14-Aug	23:02	70	M	Down	657
14-Aug	23:03	80	M	Up	658
14-Aug	23:21	60	M	Down	657
14-Aug	23:41	60	M	Down	656
14-Aug	23:44	60	M	Down	655
14-Aug	23:46	80	M	Down	654
14-Aug	23:57	80	M	Up	655
15-Aug	0:00	70	M	Up	656
15-Aug	00:08	50	M	Up	657
15-Aug	0:11	80	M	Up	658
15-Aug	0:15	50	M	Down	657
15-Aug	0:17	80	F	Up	658
15-Aug	0:17	80	M	Up	659
15-Aug	0:25	70	F	Up	660
15-Aug	0:28	80	M	Up	661
15-Aug	0:33	70	M	Up	662
15-Aug	0:42	80	M	Up	663
15-Aug	1:01	80	M	Up	664
15-Aug	1:01	80	M	Up	665
15-Aug	1:09	80	M	Down	664
15-Aug	1:13	80	M	Up	665

Table B-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
15-Aug	1:14	70	F	Up	666
15-Aug	1:19	80	F	Up	667
15-Aug	1:37	70	M	Up	668
15-Aug	2:11	80	M	Down	667
15-Aug	2:18	-	F	Up	668
15-Aug	2:45	60	M	Down	667
15-Aug	2:59	80	M	Up	668
15-Aug	3:20	80	F	Up	669
15-Aug	3:21	80	M	Up	670
15-Aug	3:25	70	M	Up	671
15-Aug	3:25	80	M	Up	672
15-Aug	3:38	-	M	Down	671
15-Aug	6:42	80	M	Up	672
15-Aug	3:52	80	M	Up	673
15-Aug	4:33	70	M	Up	674
15-Aug	5:09	80	M	Down	673
15-Aug	5:20	80	M	Down	672
15-Aug	5:47	80	M	Up	673
15-Aug	6:20	70	M	Down	672
15-Aug	6:52	70	M	Up	673
15-Aug	6:58	50	M	Down	672
15-Aug	10:53	70	M	Down	671
15-Aug	12:16	60	M	Down	670
15-Aug	12:27	60	M	Up	671
15-Aug	13:18	70	M	Up	672
15-Aug	14:40	60	M	Down	671
15-Aug	16:35	70	M	Down	670
15-Aug	16:38	70	M	Up	671
15-Aug	18:33	70	M	Down	670
15-Aug	18:37	60	M	Up	671
15-Aug	18:39	70	M	Down	670
15-Aug	18:41	70	M	Down	669
15-Aug	18:42	60	M	Down	668
15-Aug	19:07	60	M	Up	669
15-Aug	19:51	70	M	Up	670
15-Aug	21:16	60	M	Down	669

Table B-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
15-Aug	21:21	70	M	Up	670
15-Aug	21:23	70	M	Down	669
15-Aug	21:50	50	M	Up	670
15-Aug	22:02	50	M	Down	669
15-Aug	22:03	50	M	Down	668
15-Aug	22:07	70	M	Up	669
15-Aug	22:08	60	M	Up	670
15-Aug	22:12	60	M	Down	669
15-Aug	22:16	80	M	Down	668
15-Aug	22:34	70	M	Up	669
15-Aug	22:37	60	M	Down	668
15-Aug	22:41	60	M	Down	667
15-Aug	22:49	60	M	Up	668
15-Aug	22:50	60	M	Up	669
15-Aug	23:16	60	M	Up	670
15-Aug	23:30	80	M	Up	670
15-Aug	23:34	80	M	Up	672
15-Aug	23:40	70	M	Down	671
15-Aug	23:45	80	M	Up	672
15-Aug	23:49	60	M	Down	671
16-Aug	0:26	70	M	Down	670
16-Aug	0:32	50	M	Up	671
16-Aug	0:56	70	M	Down	670
16-Aug	0:59	60	M	Up	671
16-Aug	1:30	80	M	Up	672
16-Aug	1:36	70	M	Up	673
16-Aug	1:49	70	M	Up	674
16-Aug	1:56	80	M	Up	675
16-Aug	2:13	-	M	Up	676
16-Aug	2:21	80	F	Up	677
16-Aug	2:21	80	M	Up	678
16-Aug	2:30	70	M	Up	679
16-Aug	2:31	-	M	UP	680
16-Aug	2:48	70	M	Up	681
16-Aug	2:58	60	M	Up	682
16-Aug	3:12	70	M	UP	683

Table B-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
16-Aug	3:17	70	M	Up	684
16-Aug	3:47	80	F	Up	685
16-Aug	4:08	70	M	Down	684
16-Aug	4:21	60	M	Up	685
16-Aug	4:48	70	F	Up	686
16-Aug	5:04	80	M	Up	687
16-Aug	5:32	70	F	Up	688
16-Aug	6:02	70	M	Up	689
16-Aug	6:02	80	M	Down	687
16-Aug	6:05	80	M	Up	688
16-Aug	6:10	80	M	Down	687
16-Aug	6:10	60	M	Down	686
16-Aug	6:12	60	M	Up	687
16-Aug	6:36	70	M	Down	686
16-Aug	6:39	80	M	Up	687
16-Aug	6:50	80	M	Up	688
16-Aug	6:58	70	M	Down	687
16-Aug	7:01	70	M	Down	686
16-Aug	7:04	70	M	Up	687
16-Aug	7:04	70	F	Up	689
16-Aug	7:04	70	F	Up	690
16-Aug	7:07	70	M	Down	689
16-Aug	7:07	70	M	Down	688
16-Aug	7:07	60	M	Up	689
16-Aug	7:07	70	M	Up	690
16-Aug	7:09	60	M	Down	689
16-Aug	7:11	80	M	Up	690
16-Aug	7:25	70	M	Down	689
16-Aug	7:25	70	M	Down	688
16-Aug	7:31	70	M	Down	687
16-Aug	7:40	70	M	Down	686
16-Aug	7:40	70	-	Down	685
16-Aug	7:44	60	M	Up	686
16-Aug	7:44	70	F	Up	687
16-Aug	7:46	70	M	Up	688
16-Aug	7:48	70	M	Down	687

Table B-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
16-Aug	7:48	70	F	Down	686
16-Aug	7:48	70	M	Down	685
16-Aug	7:50	70	M	Up	686
16-Aug	7:52	70	F	Up	687
16-Aug	7:52	70	M	Up	688
16-Aug	7:52	70	M	Up	689
16-Aug	8:00	70	M	Down	688
16-Aug	8:03	70	M	Up	689
16-Aug	8:05	70	F	Down	688
16-Aug	8:08	70	M	Down	687
16-Aug	8:09	70	F	Up	688
16-Aug	8:10	70	M	Up	689
16-Aug	8:12	70	M	Down	688
16-Aug	8:12	70	M	Down	687
16-Aug	8:13	70	F	Down	686
16-Aug	8:14	70	M	Down	685
16-Aug	8:14	70	M	Down	684
16-Aug	8:17	70	M	Up	685
16-Aug	8:18	70	F	Up	686
16-Aug	8:20	70	M	Up	687
16-Aug	8:20	70	M	Down	686
16-Aug	8:21	70	M	Up	687
16-Aug	8:22	70	M	Up	688
16-Aug	8:25	70	M	Up	689
16-Aug	8:34	70	M	Down	688
16-Aug	8:35	70	M	Down	687
16-Aug	8:37	70	M	Up	688
16-Aug	8:38	-	M	Up	689
16-Aug	8:40	60	M	Down	688
16-Aug	8:40	70	M	Down	687
16-Aug	8:40	60	M	Up	688
16-Aug	8:40	70	M	Up	689
16-Aug	8:41	60	M	Down	688
16-Aug	8:41	70	M	Down	667
16-Aug	8:42	70	M	Down	686
16-Aug	8:42	70	M	Down	685

Table B-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
16-Aug	8:43	70	M	Down	684
16-Aug	8:43	70	M	Down	683
16-Aug	8:43	70	M	Up	684
16-Aug	8:43	70	M	Up	685
16-Aug	8:44	50	M	Up	686
16-Aug	8:44	70	M	Up	687
16-Aug	8:44	70	M	Up	688
16-Aug	8:46	60	M	Down	687
16-Aug	8:46	70	M	Down	686
16-Aug	8:46	70	F	Down	685
16-Aug	8:46	60	M	Up	686
16-Aug	8:46	70	M	Up	687
16-Aug	8:49	70	M	Down	686
16-Aug	8:49	70	M	Down	685
16-Aug	8:50	70	M	Up	686
16-Aug	8:50	70	F	Up	687
16-Aug	8:50	70	M	Up	688
16-Aug	8:50	70	M	Down	687
16-Aug	8:50	60	M	Up	688
16-Aug	8:50	70	M	Up	689
16-Aug	8:51	70	M	Down	688
16-Aug	8:52	70	M	Up	689
16-Aug	8:52	50	M	Down	688
16-Aug	8:52	70	M	Down	687
16-Aug	8:52	50	M	Up	688
16-Aug	8:54	70	M	Up	689
16-Aug	8:55	70	M	Down	688
16-Aug	8:57	80	M	Up	689
16-Aug	9:01	60	M	Down	688
16-Aug	9:02	70	M	Down	687
16-Aug	9:02	70	M	Down	686
16-Aug	9:02	60	M	Up	687
16-Aug	9:03	70	M	Up	688
16-Aug	9:03	70	M	Up	689
16-Aug	9:04	70	M	Down	688
16-Aug	9:04	70	M	Down	687

Table B-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
16-Aug	9:05	70	M	Up	688
16-Aug	9:05	70	M	Down	687
16-Aug	9:05	70	F	Down	686
16-Aug	9:06	60	M	Down	685
16-Aug	9:06	70	M	Down	684
16-Aug	9:06	70	M	Up	685
16-Aug	9:06	80	M	Up	686
16-Aug	9:06	70	M	Up	687
16-Aug	9:06	60	M	Down	686
16-Aug	9:06	60	M	Down	685
16-Aug	9:07	70	M	Up	686
16-Aug	9:07	80	M	Up	687
16-Aug	9:08	60	M	Up	688
16-Aug	9:08	70	M	Up	689
16-Aug	9:09	70	M	Down	688
16-Aug	9:09	50	M	Down	687
16-Aug	9:10	70	M	Up	688
16-Aug	9:10	70	M	Up	689
16-Aug	9:11	70	F	Up	690
16-Aug	9:12	60	M	Down	689
16-Aug	9:12	70	M	Down	688
16-Aug	9:12	70	M	Up	689
16-Aug	9:13	80	M	Up	690
16-Aug	9:13	60	M	Down	689
16-Aug	9:13	60	M	Up	690
16-Aug	9:14	70	M	Up	691
16-Aug	9:14	60	M	Down	690
16-Aug	9:16	60	M	Up	691
16-Aug	9:18	-	M	Down	690
16-Aug	9:18	60	M	Down	689
16-Aug	9:18	60	M	Up	690
16-Aug	9:18	70	M	Up	691
16-Aug	9:20	70	M	Up	692
16-Aug	9:20	70	M	Up	693
16-Aug	9:21	70	M	Down	692
16-Aug	9:21	70	M	Down	691

Table B-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
16-Aug	9:21	60	M	Down	690
16-Aug	9:22	70	M	Down	689
16-Aug	9:22	60	M	Up	690
16-Aug	9:22	60	M	Down	689
16-Aug	9:23	70	M	Up	690
16-Aug	9:23	70	M	Down	689
16-Aug	9:24	70	M	Up	690
16-Aug	9:26	70	M	Down	689
16-Aug	9:28	60	M	Down	688
16-Aug	9:29	60	M	Up	689
16-Aug	9:29	60	M	Down	688
16-Aug	9:29	70	M	Up	689
16-Aug	9:30	60	M	Up	690
16-Aug	9:31	70	M	Up	691
16-Aug	9:32	70	M	Up	692
16-Aug	9:32	70	M	Down	691
16-Aug	9:32	70	M	Down	690
16-Aug	9:33	80	M	Up	691
16-Aug	10:02	70	M	Down	690
16-Aug	10:02	70	M	Down	689
16-Aug	10:10	70	M	Up	690
16-Aug	10:11	70	M	Up	691
16-Aug	10:11	70	M	Up	692
16-Aug	10:12	70	M	Down	691
16-Aug	10:14	70	M	Up	692
16-Aug	10:15	60	M	Down	691
16-Aug	10:20	60	M	Up	692
16-Aug	10:24	70	M	Down	691
16-Aug	10:24	70	M	Up	692
16-Aug	10:34	70	M	Down	691
16-Aug	10:34	50	M	Down	690
16-Aug	10:34	60	M	Up	691
16-Aug	10:36	70	M	Down	690
16-Aug	10:37	70	M	Up	691
16-Aug	10:38	70	M	Up	692
16-Aug	11:00	70	M	Up	693

Table B-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
16-Aug	11:31	70	M	Down	692
16-Aug	11:31	60	M	Down	691
16-Aug	11:36	70	F	Down	690
16-Aug	11:36	70	M	Down	689
16-Aug	11:36	60	M	Up	690
16-Aug	11:40	70	F	Up	691
16-Aug	11:40	70	M	Up	692
16-Aug	11:41	70	M	Down	691
16-Aug	11:41	70	M	Up	692
16-Aug	1:05	70	M	Down	691
16-Aug	12:08	70	M	Up	692
16-Aug	12:15	70	M	Down	691
16-Aug	12:15	70	M	Down	690
16-Aug	12:15	70	M	Up	691
16-Aug	12:20	80	M	Up	692
16-Aug	12:26	70	M	Up	693
16-Aug	12;35	70	M	Down	692
16-Aug	12:37	70	M	Up	693
16-Aug	12:40	70	M	Down	692
16-Aug	12;41	70	F	Down	691
16-Aug	12:46	70	F	Up	692
16-Aug	12:52	70	F	Down	691
16-Aug	12;52	70	M	Down	690
16-Aug	12:56	70	F	Up	691
16-Aug	12:56	80	M	Up	692
16-Aug	13;08	70	M	Down	691
16-Aug	13:09	80	M	Down	690
16-Aug	13:11	80	M	Up	691
16-Aug	13:20	80	M	Down	690
16-Aug	13:20	80	M	Up	691
16-Aug	13:21	80	M	Down	690
16-Aug	14:08	70	M	Down	689
16-Aug	14:13	70	M	Up	690
16-Aug	15:45	50	M	Up	691
16-Aug	15:55	60	M	Down	690
16-Aug	15:55	60	M	Down	689

Table B-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
16-Aug	15:56	60	M	Up	690
16-Aug	15:56	70	M	Up	691
16-Aug	15:59	80	M	Down	690
16-Aug	16:01	80	M	Up	691
16-Aug	16:02	70	M	Down	690
16-Aug	16:02	50	M	Down	689
16-Aug	16:02	70	M	Down	688
16-Aug	16:03	70	M	Up	689
16-Aug	16:03	60	M	Up	690
16-Aug	16:12	70	M	Down	689
16-Aug	16:13	80	M	Up	690
16-Aug	16:14	70	M	Down	689
16-Aug	16:18	60	M	Down	688
16-Aug	16:18	60	M	Up	689
16-Aug	16:21	60	M	Down	688
16-Aug	16:25	50	M	Up	689
16-Aug	16:30	80	M	Up	690
16-Aug	16:42	70	M	Up	691
16-Aug	16:55	60	M	Down	690
16-Aug	16:56	50	M	Down	689
16-Aug	16:56	70	M	Down	688
16-Aug	16:58	60	M	Up	689
16-Aug	17:00	70	M	Up	690
16-Aug	17:00	50	M	Up	691
16-Aug	17:02	60	M	Down	690
16-Aug	17:05	50	M	Up	691
16-Aug	17:11	60	M	Down	690
16-Aug	17:11	80	M	Down	689
16-Aug	17:12	50	M	Up	690
16-Aug	17:13	50	M	Up	691
16-Aug	17:16	50	M	Down	690
16-Aug	17:18	70	M	Up	691
16-Aug	17:19	60	M	Up	692
16-Aug	17:20	60	M	Down	691
16-Aug	17:20	50	M	Down	690
16-Aug	17:24	60	M	Up	691

Table B-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
16-Aug	17:24	60	M	Down	690
16-Aug	17:27	50	M	Up	691
16-Aug	17:30	60	M	Up	692
16-Aug	17:31	80	F	Down	691
16-Aug	17:31	80	M	Down	690
16-Aug	17:31	50	M	Up	691
16-Aug	17:31	70	M	Up	692
16-Aug	17:31	50	M	Down	691
16-Aug	17:31	70	M	Down	690
16-Aug	17:31	50	M	Up	691
16-Aug	17:31	80	F	Up	692
16-Aug	17:32	50	M	Down	691
16-Aug	17:32	80	M	Up	692
16-Aug	17:33	50	M	Down	691
16-Aug	17:33	80	M	Down	690
16-Aug	17:33	80	F	Down	689
16-Aug	17:33	50	M	Down	688
16-Aug	17:36	50	M	Down	687
16-Aug	17:37	70	M	Down	686
16-Aug	17:39	50	M	Up	687
16-Aug	17:40	70	M	Up	688
16-Aug	17:41	80	F	Up	689
16-Aug	17:41	70	M	Up	690
16-Aug	17:46	80	M	Down	689
16-Aug	17:46	60	M	Down	688
16-Aug	17:48	50	M	Up	689
16-Aug	17:49	60	M	Down	688
16-Aug	17:51	80	F	Down	687
16-Aug	17:53	50	M	Up	688
16-Aug	17:59	50	M	Down	687
16-Aug	17:59	60	M	Down	686
16-Aug	18:00	60	M	Up	687
16-Aug	18:00	50	M	Up	688
16-Aug	18:00	80	M	Up	689
16-Aug	18:01	80	F	Up	690
16-Aug	18:01	60	M	Down	689

Table B-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
16-Aug	18:02	60	M	Up	690
16-Aug	18:08	50	M	Up	691
16-Aug	18:41	80	M	Up	692
16-Aug	18:46	80	M	Up	693
16-Aug	18:48	70	M	Down	692
16-Aug	18:51	80	M	Down	691
16-Aug	18:51	70	M	Down	690
16-Aug	18:52	80	M	Up	691
16-Aug	18:54	50	M	Up	692
16-Aug	18:56	80	M	Up	693
16-Aug	19:01	80	M	Down	692
16-Aug	19:02	60	M	Up	693
16-Aug	19:04	80	M	Up	694
16-Aug	19:16	80	M	Down	693
16-Aug	19:18	80	M	Up	694
16-Aug	19:55	60	M	Down	693
16-Aug	20:00	80	F	Up	694
16-Aug	20:06	60	M	Up	695
16-Aug	20:07	50	M	Up	696
16-Aug	20:07	60	M	Up	697
16-Aug	21:12	60	M	Up	698
16-Aug	21:26	60	M	Down	697
16-Aug	21:26	70	M	Down	696
16-Aug	21:34	80	M	Down	695
16-Aug	21:38	60	M	Up	696
16-Aug	21:39	60	M	Down	695
16-Aug	21:41	80	M	Up	696
16-Aug	21:42	60	M	Up	697
16-Aug	21:45	80	M	Up	698
16-Aug	21:47	70	M	Down	697
16-Aug	21:49	80	M	Up	698
16-Aug	21:59	70	M	Down	697
16-Aug	22:10	70	M	Down	696
16-Aug	22:13	80	M	Up	697
16-Aug	22:32	80	M	Down	696
16-Aug	22:34	70	M	Up	697

Table B-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
16-Aug	22:39	80	M	Up	698
16-Aug	22:38	60	M	Down	697
16-Aug	23:34	80	M	Down	696
16-Aug	23:36	60	M	Up	697
16-Aug	23:37	70	M	Up	698
16-Aug	23:37	80	M	Up	699
16-Aug	23:38	70	M	Down	698
16-Aug	23:38	80	M	Down	697
16-Aug	23:41	80	M	Up	698
16-Aug	23:42	80	F	Up	699
16-Aug	23:42	80	M	Up	700
16-Aug	23:46	80	M	Down	699
16-Aug	23:50	80	M	Up	700
17-Aug	0:14	50	M	Up	701
17-Aug	0:20	80	M	Down	700
17-Aug	0:25	50	M	Up	701
17-Aug	0:43	80	M	Up	702
17-Aug	0:54	60	M	Up	703
17-Aug	1:00	60	M	Up	704
17-Aug	1:00	70	M	Up	705
17-Aug	1:09	80	M	Down	704
17-Aug	1:14	80	M	Down	703
17-Aug	1:16	80	M	Up	704
17-Aug	1:20	80	M	Up	705
17-Aug	1:20	60	M	Up	706
17-Aug	1:29	60	M	Down	705
17-Aug	1:42	-	M	Down	704
17-Aug	1:45	70	M	Up	705
17-Aug	1:46	70	M	Up	706
17-Aug	2:36	70	M	Down	705
17-Aug	3:04	60	M	Down	704
17-Aug	3:19	80	M	Up	705
17-Aug	3:20	70	M	Up	706
17-Aug	3:21	80	M	Up	707
17-Aug	3:21	70	M	Down	706
17-Aug	3:24	80	M	Up	707

Table B-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
17-Aug	3:51	60	M	Down	706
17-Aug	4:13	80	M	Down	705
17-Aug	4:29	70	F	Up	706
17-Aug	4:39	70	M	Up	707
17-Aug	4:42	70	-	Up	708
17-Aug	4:45	70	M	Down	707
17-Aug	5:01	70	M	Down	706
17-Aug	5:04	80	M	Up	707
17-Aug	5:09	80	M	Down	706
17-Aug	5:10	70	M	Up	707
17-Aug	5:15	70	M	Down	706
17-Aug	5:16	80	M	Down	705
17-Aug	5:20	80	M	Up	706
17-Aug	5:34	60	M	Up	707
17-Aug	5:51	60	M	Up	708
17-Aug	5:52	70	M	Up	709
17-Aug	6:11	70	M	Up	710
17-Aug	6:41	70	F	Up	711
17-Aug	6:42	60	M	Down	710
17-Aug	6:43	60	M	Up	711
17-Aug	6:48	60	M	Down	710
17-Aug	6:48	70	M	Down	709
17-Aug	6:49	60	M	Up	710
17-Aug	6:50	70	M	Up	711
17-Aug	6:50	60	M	Down	710
17-Aug	6:50	70	M	Down	709
17-Aug	6:51	60	M	Up	710
17-Aug	6:51	70	M	Up	711
17-Aug	6:52	70	M	Down	710
17-Aug	6:54	70	M	Up	711
17-Aug	7:05	60	M	Down	710
17-Aug	7:23	70	M	Down	709
17-Aug	7:24	60	M	Up	710
17-Aug	7:24	70	M	Up	711
17-Aug	7:25	60	M	Down	710
17-Aug	7:25	70	M	Down	709

Table B-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
17-Aug	7:26	70	M	Down	708
17-Aug	7:27	60	M	Down	707
17-Aug	7:28	70	M	Up	708
17-Aug	7:28	-	-	Up	709
17-Aug	7:30	60	M	Down	708
17-Aug	7:30	70	M	Down	707
17-Aug	7:30	50	M	Up	708
17-Aug	7:30	80	M	Down	707
17-Aug	7:30	70	M	Up	708
17-Aug	7:30	80	M	Up	709
17-Aug	7:31	60	M	Down	708
17-Aug	7:33	70	M	Up	709
17-Aug	7:34	60	M	Down	708
17-Aug	7:35	70	M	Up	709
17-Aug	7:48	70	M	Down	708
17-Aug	7:51	70	M	Down	707
17-Aug	7:52	70	M	Up	708
17-Aug	7:52	70	M	Up	709
17-Aug	7:52	60	M	Down	708
17-Aug	7:55	60	M	Down	707
17-Aug	7:57	70	M	Down	706
17-Aug	7:58	60	M	Up	707
17-Aug	7:58	60	M	Up	708
17-Aug	7:58	70	M	Up	709
17-Aug	7:58	60	M	Down	708
17-Aug	8:00	60	M	Down	707
17-Aug	8:00	70	M	Up	708
17-Aug	8:01	60	M	Up	707
17-Aug	8:02	70	M	Down	708
17-Aug	8:03	70	M	Up	709
17-Aug	8:03	70	M	Up	708
17-Aug	8:04	60	M	Down	709
17-Aug	8:04	70	M	Down	710
17-Aug	8:04	60	M	Up	709
17-Aug	8:06	60	M	Down	708
17-Aug	8:06	70	M	Up	709

Table B-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
17-Aug	10:32	60	M	Down	708
17-Aug	10:36	70	M	Up	709
17-Aug	10:39	60	M	Down	708
17-Aug	10:45	60	M	Up	709
17-Aug	10:46	60	M	Down	708
17-Aug	10:47	60	M	Up	709
17-Aug	10:50	60	M	Down	708
17-Aug	10:51	80	M	Down	707
17-Aug	10:52	80	M	Up	708
17-Aug	10:54	80	M	Down	707
17-Aug	10:55	80	M	Up	708
17-Aug	10:55	60	M	Down	708
17-Aug	10:58	70	M	Up	708
17-Aug	11:57	70	M	Down	707
17-Aug	11:58	70	M	Up	708
17-Aug	11:59	70	M	Down	708
17-Aug	12:10	80	M	Down	706
17-Aug	12:11	80	M	Up	707
17-Aug	12:14	80	M	Down	706
17-Aug	12:50	80	M	Down	705
17-Aug	12:52	70	M	Down	704
17-Aug	12:58	80	M	Down	703
17-Aug	12:59	80	M	Up	704
17-Aug	13:00	70	M	Down	703
17-Aug	13:09	80	M	Down	702
17-Aug	13:11	70	M	Up	703
17-Aug	13:12	80	M	Up	704
17-Aug	13:17	80	M	Down	703
17-Aug	13:37	70	M	Down	702
17-Aug	13:37	80	M	Down	701
17-Aug	13:37	70	M	Up	702
17-Aug	13:37	80	M	Up	703
17-Aug	15:17	70	M	Down	702
17-Aug	15:41	70	M	Up	703
17-Aug	15:58	70	M	Up	704
17-Aug	16:00	70	M	Up	705

Table B-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
17-Aug	16:01	70	M	Down	704
17-Aug	16:05	70	M	Up	705
17-Aug	16:22	70	M	Down	704
17-Aug	16:25	70	M	Up	705
17-Aug	17:44	80	M	Down	704
17-Aug	17:48	80	M	Up	705
17-Aug	18:12	60	M	Down	704
17-Aug	18:38	70	M	Up	705
17-Aug	18:41	70	M	Up	706
17-Aug	18:44	70	M	Up	707
17-Aug	19:22	70	M	Down	706
17-Aug	19:24	70	M	Up	707
17-Aug	19:36	80	M	Down	706
17-Aug	20:49	80	M	Up	707
17-Aug	20:52	50	M	Up	708
17-Aug	21:26	70	M	Up	709
17-Aug	23:03	50	M	Up	710
17-Aug	23:12	80	M	Down	709
17-Aug	23:15	80	M	Up	710
17-Aug	23:17	80	M	Down	709
17-Aug	23:20	80	M	Up	710
18-Aug	0:15	50	M	Up	711
18-Aug	0:33	70	M	Up	712
18-Aug	0:41	80	M	Down	711
18-Aug	0:53	50	M	Down	710
18-Aug	0:54	70	F	Up	711
18-Aug	0:57	70	F	Up	712
18-Aug	0:58	70	M	Up	713
18-Aug	1:07	70	M	Down	712
18-Aug	1:21	70	M	Up	713
18-Aug	1:45	70	M	Up	714
18-Aug	1:49	80	M	Up	715
18-Aug	1:55	70	F	Up	716
18-Aug	2:08	70	F	Up	717
18-Aug	2:09	60	M	Up	718
18-Aug	2:09	60	M	Up	719

Table B-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
18-Aug	2:35	60	M	Down	718
18-Aug	3:00	60	M	Down	717
18-Aug	3:12	70	M	Down	716
18-Aug	3:22	70	F	Up	717
18-Aug	3:24	50	M	Up	718
18-Aug	5:37	80	M	Up	719
18-Aug	6:11	60	M	Up	720
18-Aug	6:15	60	M	Down	719
18-Aug	6:19	60	M	Up	720
18-Aug	6:44	70	F	Down	719
18-Aug	6:44	80	M	Down	718
18-Aug	6:49	70	F	Up	719
18-Aug	6:49	80	M	Up	720
18-Aug	7:05	60	M	Down	719
18-Aug	9:03	50	M	Up	720
18-Aug	9:03	60	M	Down	719
18-Aug	9:04	60	M	Up	720
18-Aug	11:00	60	M	Down	719
18-Aug	11:22	70	M	Down	718
18-Aug	11:22	70	M	Up	719
18-Aug	11:23	70	M	Down	718
18-Aug	13:22	50	M	Up	719
18-Aug	13:23	60	M	Down	718
18-Aug	13:24	60	M	Up	719
18-Aug	13:25	60	M	Down	718
18-Aug	13:27	60	M	Up	719
18-Aug	13:29	70	M	Up	720
18-Aug	13:36	60	M	Down	719
18-Aug	13:37	60	M	Up	720
18-Aug	13:41	60	M	Down	719
18-Aug	13:42	60	M	Up	720
18-Aug	13:43	60	M	Down	719
18-Aug	13;44	60	M	Up	720
18-Aug	14:57	60	M	Down	719
18-Aug	15:42	60	M	Down	718
18-Aug	15:43	70	M	Down	717

Table B-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
18-Aug	20:44	50	M	Up	718
18-Aug	21:19	70	M	Down	717
18-Aug	21:32	60	M	Down	716
18-Aug	23:14	70	M	Up	717
18-Aug	23:30	70	F	Up	718
18-Aug	23:37	60	M	Up	719
18-Aug	23:41	70	M	Up	720
18-Aug	23:55	70	F	Up	721
19-Aug	0:07	70	M	Down	720
19-Aug	0:26	70	M	Up	721
19-Aug	0:36	50	M	Up	722
19-Aug	0:40	60	M	Up	723
19-Aug	0:46	70	F	Up	724
19-Aug	0:46	80	M	Up	725
19-Aug	0:47	70	M	Up	726
19-Aug	0:50	70	F	Up	727
19-Aug	0:52	70	M	Up	728
19-Aug	2:47	70	M	Up	729
19-Aug	2:56	70	M	Up	730
19-Aug	3:06	70	M	Down	729
19-Aug	3:37	60	M	Up	730
19-Aug	4:04	70	M	Up	731
19-Aug	4:09	60	M	Down	730
19-Aug	5:37	70	M	Up	731
19-Aug	7:55	60	M	Down	730
19-Aug	8:13	80	M	Up	731
19-Aug	8:49	80	F	Up	732
19-Aug	15:23	70	M	Up	733
19-Aug	15:28	70	M	Up	734
19-Aug	15:29	70	M	Down	733
19-Aug	15:31	60	M	Up	734
19-Aug	15:50	70	M	Down	733
19-Aug	15:50	70	M	Up	734
19-Aug	15:52	70	M	Down	733
19-Aug	15:59	70	M	Up	734
19-Aug	16:56	70	M	Down	733

Table B-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
19-Aug	17:37	50	M	Down	732
19-Aug	17:57	50	M	Up	733
19-Aug	18:18	60	M	Up	734
19-Aug	18:58	50	M	Down	733
19-Aug	19:57	70	F	Up	734
19-Aug	20:03	60	M	Down	733
19-Aug	20:09	80	F	Up	734
19-Aug	20:35	50	M	Up	735
19-Aug	20:45	70	M	Up	736
19-Aug	20:51	70	M	Down	735
19-Aug	21:05	60	M	Up	736
19-Aug	21:58	70	M	Up	737
19-Aug	22:14	80	M	Up	738
19-Aug	22:28	70	M	Down	737
20-Aug	0:22	60	M	Up	738
20-Aug	0:31	70	M	Down	737
20-Aug	0:33	60	M	Down	736
20-Aug	1:03	70	F	Up	737
20-Aug	1:54	70	F	Up	738
20-Aug	2:46	70	M	Up	739
20-Aug	3:25	70	M	Down	738
20-Aug	3:56	80	F	Up	739
20-Aug	4:35	80	F	Up	740
20-Aug	4:38	70	M	Up	741
20-Aug	5:04	70	M	Up	742
20-Aug	5:19	70	F	Up	743
20-Aug	5:25	80	M	Up	744
20-Aug	5:41	70	F	Up	745
20-Aug	6:28	80	M	Down	744
20-Aug	6:31	80	M	Up	745
20-Aug	6:34	80	M	Down	744
20-Aug	6:35	80	M	Up	745
20-Aug	6:36	80	M	Down	744
20-Aug	6:46	70	M	Down	743
20-Aug	6:48	60	M	Down	742
20-Aug	6:52	70	M	Up	743

Table B-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
20-Aug	7:02	70	M	Up	744
20-Aug	7:27	80	M	Down	743
20-Aug	8:36	70	M	Down	742
20-Aug	10:08	70	M	Up	743
20-Aug	11:13	60	M	Down	742
20-Aug	11:26	50	M	Down	741
20-Aug	11:49	50	M	Up	742
20-Aug	12:04	60	M	Up	743
20-Aug	12:05	80	M	Up	744
20-Aug	12:18	80	M	Down	743
20-Aug	12:21	80	M	Up	744
20-Aug	12:53	90	M	Down	743
20-Aug	13:23	80	M	Down	742
20-Aug	13:28	80	M	Up	743
20-Aug	14:08	70	M	Down	742
20-Aug	14:08	70	M	Down	741
20-Aug	14:09	70	M	Up	742
20-Aug	17:09	70	M	Up	743
20-Aug	14:12	70	M	Down	742
20-Aug	14:26	70	M	Up	743
20-Aug	14:31	80	M	Down	742
20-Aug	14:32	70	M	Down	741
20-Aug	14:55	80	M	Up	742
20-Aug	16:58	70	M	Down	741
20-Aug	16:19	80	F	Up	742
20-Aug	16:31	70	M	Up	743
20-Aug	16:42	70	M	Up	744
20-Aug	17:01	70	M	Up	745
20-Aug	17:21	80	F	Up	746
20-Aug	17:22	80	M	Up	747
20-Aug	17:35	80	M	Up	748
20-Aug	17:46	70	M	Down	747
20-Aug	18:24	80	M	Up	748
20-Aug	18:42	80	M	Down	747
20-Aug	18:50	80	M	Down	746
20-Aug	18:50	80	M	Down	745

Table B-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
20-Aug	19:06	80	M	Up	746
20-Aug	19:16	80	M,	Down	745
20-Aug	19:19	80	M	Up	746
20-Aug	20:20	80	M	Up	747
20-Aug	21:51	60	M	Down	746
20-Aug	22:52	70	M	Up	747
20-Aug	23:58	80	F	Up	748
21-Aug	0:05	50	M	Up	749
21-Aug	0:21	70	M	Up	750
21-Aug	0:43	60	F	Up	751
21-Aug	0:45	70	F	Up	752
21-Aug	0:50	50	M	Down	751
21-Aug	0:54	70	F	Up	752
21-Aug	0:56	80	M	Down	751
21-Aug	1:07	70	M	Up	752
21-Aug	1:16	80	F	Up	753
21-Aug	2:53	60	M	Up	754
21-Aug	3:28	70	M	Up	755
21-Aug	3:31	70	M	Down	754
21-Aug	3:41	70	M	Up	755
21-Aug	3:57	70	M	Down	754
21-Aug	5:14	70	M	Down	753
21-Aug	5:51	80	M	Up	754
21-Aug	6:22	70	M	Down	753
21-Aug	6:46	70	M	Up	754
21-Aug	9:26	60	M	Down	753
21-Aug	9:27	60	M	Up	754
21-Aug	9:27	60	M	Down	753
21-Aug	9:28	60	M	Up	754
21-Aug	9:29	60	M	Down	753
21-Aug	11:30	80	M	Up	754
21-Aug	12:09	60	M	Down	753
21-Aug	12:10	60	M	Up	754
21-Aug	12:18	50	M	Up	755
21-Aug	12:32	50	M	Down	754
21-Aug	12:50	50	M	Up	755

Table B-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
21-Aug	12:50	50	M	Down	754
21-Aug	12:52	52	M	Up	755
21-Aug	13:23	60	M	Down	754
21-Aug	14:08	50	M	Up	755
21-Aug	14:51	80	M	Down	754
21-Aug	15:26	80	M	Up	755
21-Aug	16:27	90	M	Up	756
21-Aug	16:35	70	M	Down	755
21-Aug	16:38	70	M	Up	756
21-Aug	16:38	70	M	Up	757
21-Aug	16:40	70	M	Down	756
21-Aug	17:12	80	M	Down	755
21-Aug	17:25	80	M	Up	756
21-Aug	17:40	70	M	Down	755
21-Aug	17:42	80	M	Down	754
21-Aug	17:51	80	M	Down	753
21-Aug	18:20	70	M	Up	754
21-Aug	18:20	80	M	Up	755
21-Aug	18:20	80	F	Up	756
21-Aug	18:41	70	M	Up	757
21-Aug	18:44	70	M	Up	758
21-Aug	19:04	60	M	Up	759
21-Aug	19:11	70	M	Up	760
21-Aug	19:36	70	M	Down	759
21-Aug	19:46	70	M	Down	758
21-Aug	20:37	70	M	Down	757
21-Aug	20:41	70	M	Up	758
21-Aug	20:44	70	M	Down	757
21-Aug	20:59	70	M	Up	758
21-Aug	21:21	70	M	Up	759
21-Aug	21:29	70	M	Up	760
21-Aug	21:55	50	M	Up	761
21-Aug	23:30	70	F	Up	762
22-Aug	1:12	80	F	Up	763
22-Aug	2:54	80	F	Up	764
22-Aug	3:38	80	M	Up	765

Table B-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
22-Aug	6:03	70	F	Up	766
22-Aug	8:07	60	M	Down	765
22-Aug	8:28	70	M	Down	764
22-Aug	11:04	70	M	Down	763
22-Aug	11:04	70	M	Up	764
22-Aug	11:05	70	M	Down	763
22-Aug	11:26	70	M	Up	764
22-Aug	11:30	70	M	Up	765
22-Aug	12:34	70	M	Down	764
22-Aug	12:36	70	M	Down	763
22-Aug	14:03	60	M	Up	764
22-Aug	14:40	60	M	Down	763
22-Aug	15:00	70	M	Down	762
22-Aug	15:21	50	M	Up	763
22-Aug	18:33	70	M	Up	764
22-Aug	20:51	60	M	Up	765
22-Aug	20:30	80	F	Up	766
22-Aug	20:53	70	M	Up	767
22-Aug	21:34	70	M	Down	766
22-Aug	23:03	60	M	Down	765
22-Aug	23:25	70	M	Up	766
22-Aug	23:38	60	M	Up	767
23-Aug	1:38	70	F	Up	768
23-Aug	2:24	70	M	Down	767
23-Aug	2:26	70	M	Up	768
23-Aug	2:27	70	M	Down	767
23-Aug	2:32	60	F	Up	768
23-Aug	2:35	70	F	Up	769
23-Aug	3:21	70	F	Up	770
23-Aug	3:26	70	M	Down	769
23-Aug	3:28	70	M	Up	770
23-Aug	3:59	70	M	Up	771
23-Aug	4:28	70	M	Down	770
23-Aug	6:07	60	M	Up	771
23-Aug	10:35	60	M	Down	770
23-Aug	13:01	80	M	Down	769

Table B-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
23-Aug	14:28	80	M	Down	768
23-Aug	14:30	80	M	Up	769
23-Aug	14:36	70	M	Down	768
23-Aug	14:38	70	M	Up	769
23-Aug	14:45	80	M	Down	768
23-Aug	15:18	70	M	Down	767
23-Aug	15:38	80	M	Up	768
23-Aug	16:31	80	M	Up	769
23-Aug	17:58	80	M	Down	768
23-Aug	18:11	70	M	Down	767
23-Aug	18:58	70	M	Up	768
23-Aug	18:11	70	M	Down	767
23-Aug	19:38	60	M	Down	766
23-Aug	19:43	80	M	Down	765
23-Aug	19:47	60	M	Down	764
23-Aug	19:49	60	M	Up	765
23-Aug	19:51	60	M	Down	764
23-Aug	19:56	80	M	Up	765
23-Aug	20:04	60	M	Up	766
23-Aug	20:06	60	M	Up	767
23-Aug	20:33	50	M	Up	768
23-Aug	21:07	70	M	Up	769
23-Aug	21:09	70	M	Up	770
23-Aug	21:44	60	M	Down	769
23-Aug	21:58	80	F	Up	770
23-Aug	23:32	80	M	Down	769
23-Aug	22:32	80	M	Up	770
23-Aug	22:33	80	M	Down	769
23-Aug	22:52	60	M	Down	768
23-Aug	23:00	60	M	Down	767
23-Aug	23:39	70	M	Down	766
23-Aug	23:56	80	M	Up	767
24-Aug	23:56	80	M	Up	768
24-Aug	1:31	50	M	Down	767
24-Aug	2:32	60	M	Up	768
24-Aug	2:50	70	M	Down	767

Table B-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
24-Aug	3:14	70	M	Down	766
24-Aug	3:33	70	M	Up	767
24-Aug	4:59	80	M	Up	768
24-Aug	7:45	70	M	Down	767
24-Aug	9:42	60	M	Up	768
24-Aug	11:55	80	M	Down	767
24-Aug	11:59	80	M	Up	768
24-Aug	12:04	80	M	Down	767
24-Aug	12:33	80	M	Up	768
24-Aug	13:08	90	M	Up	769
24-Aug	14:11	90	M	Down	768
24-Aug	16:24	60	M	Down	767
24-Aug	17:10	60	M	Up	768
24-Aug	19:35	80	M	Up	769
24-Aug	21:02	70	M	Down	768
24-Aug	21:41	40	M	Down	767
24-Aug	21:44	40	M	Up	768
24-Aug	21:53	70	M	Down	767
24-Aug	0:34	40	M	Down	766
25-Aug	0:10	70	F	Up	767
25-Aug	0:33	70	M	Up	768
25-Aug	1:06	70	F	Up	769
25-Aug	1:32	30	M	Up	770
25-Aug	2:15	40	M	Down	769
25-Aug	3:20	70	F	Down	768
25-Aug	3:41	60	F	Up	769
25-Aug	4:02	50	M	Down	768
25-Aug	4:25	70	M	Down	767
25-Aug	4:30	70	M	Up	768
25-Aug	4:54	40	M	Down	767
25-Aug	4:55	70	M	Down	766
25-Aug	5:07	70	M	Up	767
25-Aug	6:34	80	F	Up	768
25-Aug	6:34	80	F	Up	769
25-Aug	7:01	60	M	Down	768
25-Aug	7:24	50	M	Up	769

Table B-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
25-Aug	7:26	70	M	Up	770
25-Aug	7:35	80	M	Up	771
25-Aug	8:23	70	M	Down	770
25-Aug	10:36	60	M	Down	769
25-Aug	10:39	40	M	Down	768
25-Aug	11:43	40	M	Up	769
25-Aug	12:09	70	M	Down	768
25-Aug	12:21	70	M	Up	769
25-Aug	13:09	80	M	Down	768
25-Aug	13:15	70	M	Up	769
25-Aug	14:26	80	M	Up	770
25-Aug	17:47	70	M	Down	769
25-Aug	18:15	70	M	Up	770
25-Aug	18:29	60	M	Up	771
25-Aug	21:52	70	M	Up	772
25-Aug	22:45	60	M	Down	771
25-Aug	22:50	60	M	Down	770
25-Aug	23:20	70	M	Up	771
25-Aug	23:40	70	M	Up	772
25-Aug	23:51	40	F	Down	771
26-Aug	2:56	40	M	Up	772
26-Aug	3:27	70	F	Up	773
26-Aug	3:32	70	M	Down	772
26-Aug	3:40	50	M	Up	773
26-Aug	3:52	50	M	Down	772
26-Aug	3:59	50	M	Down	771
26-Aug	4:14	60	M	Down	770
26-Aug	4:52	40	-	Down	769
26-Aug	5:06	40	-	Up	770
26-Aug	5:29	70	M	Up	771
26-Aug	6:08	60	M	Down	770
26-Aug	10:19	60	M	Up	771
26-Aug	10:20	60	M	Down	770
26-Aug	10:21	60	M	Up	771
26-Aug	10:28	60	M	Down	770
26-Aug	10:47	50	M	Down	769

Table B-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
26-Aug	10:53	50	M	Down	768
26-Aug	11:08	60	M	Up	769
26-Aug	11:20	60	M	Down	768
26-Aug	12:02	60	M	Up	769
26-Aug	14:38	60	M	Up	770
26-Aug	15:01	70	M	Down	769
26-Aug	19:35	70	M	Down	768
26-Aug	20:13	70	M	Up	769
26-Aug	20:24	60	M	Down	768
26-Aug	20:47	70	M	Down	767
26-Aug	21:28	70	M	Up	768
26-Aug	21:49	50	M	Up	769
26-Aug	21:52	60	M	Down	768
26-Aug	22:46	60	M	Down	767
26-Aug	23:43	50	M	Down	766
27-Aug	1:40	50	M	Down	765
27-Aug	4:17	70	M	Down	764
27-Aug	4:53	50	M	Up	765
27-Aug	5:03	70	M	Down	764
27-Aug	6:02	50	M	Down	763
27-Aug	6:10	70	F	Up	764
27-Aug	6:15	40	F	Up	765
27-Aug	6:50	70	F	Up	766
27-Aug	7:32	70	M	Up	767
27-Aug	7:39	80	M	Up	768
27-Aug	8:43	60	M	Up	769
27-Aug	10:43	70	M	Down	768
27-Aug	11:25	60	M	Up	769
27-Aug	12:29	60	M	Up	770
27-Aug	13:13	50	M	Down	769
27-Aug	13:38	60	M	Down	768
27-Aug	13:38	60	M	Down	767
27-Aug	14:27	80	M	Down	766
27-Aug	14:52	80	M	Up	767
27-Aug	15:19	60	M	Up	768
27-Aug	15:20	50	M	Up	769

Table B-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
27-Aug	15:28	50	M	Up	770
27-Aug	16:32	80	M	Down	769
27-Aug	16:33	60	M	Down	768
27-Aug	17:05	80	M	Up	769
27-Aug	17:17	50	M	Up	770
27-Aug	17:22	50	M	Up	771
27-Aug	17:28	50	M	Up	772
27-Aug	18:21	60	M	Down	771
27-Aug	21:23	50	M	Down	770
27-Aug	22:25	50	M	Up	771
27-Aug	23:48	40	F	Down	770
28-Aug	1:15	60	M	Down	769
28-Aug	1:31	40	F	Up	770
28-Aug	4:31	80	M	Down	769
28-Aug	5:05	80	M	Down	768
28-Aug	5:23	60	M	Up	769
28-Aug	5:26	60	M	Down	768
28-Aug	6:30	80	M	Up	769
28-Aug	6:59	60	M	Down	768
28-Aug	7:10	70	M	Up	769
28-Aug	8:15	60	M	Up	770
28-Aug	9:44	70	M	Up	771
28-Aug	10:12	80	M	Down	770
28-Aug	14:12	60	M	Up	771
28-Aug	14:23	80	M	Up	772
28-Aug	15:01	50	M	Up	773
28-Aug	17:25	80	M	Up	774
28-Aug	20:45	70	M	Up	775
28-Aug	21:32	70	M	Down	774
28-Aug	23:43	50	M	Down	773
28-Aug	23:47	50	M	Down	772
29-Aug	0:18	70	M	Up	773
29-Aug	5:25	50	M	Up	774
29-Aug	6:32	70	M	Down	773
29-Aug	10:38	70	M	Up	774
29-Aug	15:50	50	M	Up	775

Table B-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
29-Aug	16:31	60	M	Up	776
29-Aug	21:11	70	M	Up	777
29-Aug	23:30	60	M	Down	776
30-Aug	4:32	60	M	Down	775
30-Aug	7:28	70	M	Up	776
30-Aug	8:39	60	M	Down	775
30-Aug	9:28	70	M	Down	774
30-Aug	9:40	50	M	Up	775
30-Aug	10:40	70	M	Down	774
30-Aug	11:53	70	M	Down	773
30-Aug	14:00	80	M	Up	774
30-Aug	14:57	70	M	Down	773
30-Aug	16:48	60	M	Down	772
30-Aug	17:19	70	M	Up	773
30-Aug	17:41	60	M	Up	774
30-Aug	18:15	70	M	Up	775
30-Aug	23:00	60	M	Up	776
31-Aug	0:09	60	M	Down	775
31-Aug	0:21	60	M	Up	776
31-Aug	4:25	70	F	Up	777
31-Aug	4:56	60	M	Down	776
31-Aug	8:56	60	M	Up	777
31-Aug	9:49	60	M	Down	776
31-Aug	13:56	60	M	Up	777
31-Aug	17:30	60	M	Down	776
31-Aug	22:57	80	F	Down	775
31-Aug	23:00	80	F	Up	776
1-Sep	21:21	70	F	Down	775
1-Sep	21:28	70	F	Up	776
2-Sep	3:31	60	M	Down	775
2-Sep	13:23	70	M	Down	774
2-Sep	13:29	70	M	Down	773
2-Sep	17:15	70	M	Up	774
3-Sep	3:06	60	M	Down	773
3-Sep	7:52	70	M	Down	772
3-Sep	8:47	60	M	Up	773

Table B-1 (continued).

Date (2000)	Time (hours)	Estimated Length (cm)	Estimated Sex (M/F)	Direction (Up/Down)	Net Upstream Movement
3-Sep	12:49	70	M	Down	772
3-Sep	13:56	50	M	Down	771
3-Sep	13:56	70	M	Down	770
3-Sep	14:05	70	M	Up	771
3-Sep	15:51	70	M	Down	770
3-Sep	16:49	50	M	Down	769
3-Sep	18:46	80	M	Down	768
3-Sep	20:05	70	F	Down	767
3-Sep	21:18	60	M	Down	766
8-Sep	6:19	70	M	Down	765
8-Sep	13:01	70	M	Up	766
9-Sep	-	-	-	-	766
10-Sep	-	-	-	-	766
11-Sep	-	-	-	-	766
12-Sep	-	-	-	-	766
13-Sep	-	-	-	-	766
14-Sep	-	-	-	-	766
15-Sep	-	-	-	-	766

Table B-2. Diel movements of the spring and summer chinook salmon spawner migration in the Secesh River, by hour, in 2000.

Time (hours)	Total Movements (Up and Down)	Percent (%) Total Movements	Net Upstream Movements	Percent (%) Net Upstream Movements
0:00	182	8	112	15
1:00	206	9	94	13
2:00	142	6	70	10
3:00	158	7	50	7
4:00	106	5	26	4
5:00	131	6	27	4
6:00	113	5	9	1
7:00	98	4	20	3
8:00	105	4	17	2
9:00	107	5	15	2
10:00	55	2	-3	0
11:00	51	2	7	1
12:00	53	2	1	0
13:00	55	2	1	0
14:00	41	2	3	0
15:00	52	2	22	3
16:00	71	3	12	2
17:00	108	5	30	4
18:00	77	3	43	6
19:00	55	2	17	2
20:00	49	2	25	3
21:00	96	4	42	6
22:00	101	4	35	5
23:00	137	6	53	7

Time – Military time (hours)

APPENDIX C

Table C-1. Dates of net upstream migration and total movements of the spring and summer chinook salmon spawner migration in Lake Creek and the Secesh River in 2000.

	Lake Creek		Secesh River	
Date	Net Upstream	Total Movements	Net Upstream	Total Movements
22-Jun	2	2	8	8
23-Jun	3	3	*12	12
24-Jun	*2	2	12	12
25-Jun	*9	9	*42	42
26-Jun	*2	4	38	38
27-Jun	*27	27	34	38
28-Jun	15	23	55	67
29-Jun	18	28	6	32
30-Jun	*17	23	30	64
1-Jul	25	63	37	59
2-Jul	*6	14	32	56
3-Jul	21	29	12	42
4-Jul	-2	6	*5	11
5-Jul	-2	6	4	4
6-Jul	1	1	-1	3
7-Jul	3	3	1	13
8-Jul	*8	8	12	20
9-Jul	*14	14	47	55
10-Jul	18	20	4	28
11-Jul	2	6	8	32
12-Jul	4	6	4	18
13-Jul	*3	5	3	31
14-Jul	*2	8	14	28
15-Jul	7	7	21	25
16-Jul	5	7	-2	22
17-Jul	0	6	5	11
18-Jul	4	8	4	10
19-Jul	5	9	16	20
20-Jul	3	5	*4	4
21-Jul	2	4	6	6
22-Jul	1	1	1	5

Table C-1 (continued).

Date	Lake Creek		Secesh River	
	Net Upstream	Total Movements	Net Upstream	Total Movements
23-Jul	3	3	12	34
24-Jul	0	6	5	7
25-Jul	-1	1	0	8
26-Jul	3	9	4	18
27-Jul	1	3	10	16
28-Jul	6	8	6	8
29-Jul	-3	25	4	4
30-Jul	-3	19	6	16
31-Jul	5	19	2	14
1-Aug	*4	16	12	22
2-Aug	*7	7	3	21
3-Aug	4	12	9	23
4-Aug	5	15	7	17
5-Aug	5	9	10	12
6-Aug	0	42	8	14
7-Aug	5	113	5	13
8-Aug	7	59	6	26
9-Aug	6	82	13	21
10-Aug	12	56	10	36
11-Aug	-1	41	13	35
12-Aug	0	22	9	33
13-Aug	9	31	8	36
14-Aug	3	19	19	65
15-Aug	-2	54	16	70
16-Aug	-2	30	29	353
17-Aug	2	16	10	152
18-Aug	*0	6	11	59
19-Aug	*3	11	16	42
20-Aug	3	33	11	65
21-Aug	-1	49	14	62
22-Aug	0	8	5	25

Table C-1 (continued).

Date	Lake Creek		Secesh River	
	Net Upstream	Total Movements	Net Upstream	Total Movements
23-Aug	1	31	0	46
24-Aug	-3	29	-1	23
25-Aug	1	5	5	37
26-Aug	2	18	-5	31
27-Aug	-1	9	4	32
28-Aug	0	8	2	20
29-Aug	0	0	4	8
30-Aug	-1	5	0	14
31-Aug	0	8	0	10
1-Sep	0	2	0	2
2-Sep	0	0	-2	4
3-Sep	0	0	-8	12
4-Sep	0	0	0	0
5-Sep	0	0	0	0
6-Sep	0	0	0	0
7-Sep	0	0	0	0
8-Sep	0	0	0	2
9-Sep	0	0	0	0
10-Sep	0	0	0	0
11-Sep	0	0	0	0
12-Sep	0	0	0	0
13-Sep	Operation	Ceased	0	0
14-Sep			0	0
15-Sep			0	0
			Operation	Ceased

* includes corrections for downtime

Table C-2. Corrections for turbidity and equipment downtime at the Lake Creek and Secesh River fish counting stations, 2000.

Date/Time of Outage	Downtime (Hours:Minutes)	Correction (No. of Fish)	95% Confidence Interval	Standard Deviation	Variance
Lake Creek					
6/24-19:18 to 6/25-12:16	15:58	2.00	±1.68	0.40627	0.16506
6/26-2:14 to 6/26-12:30	10:16	0.00	±0.50	0.15811	0.02500
6/30-5:31 to 6/30-9:25	3:54	1.00	±3.02	0.35542	0.12632
7/2-10:06 to 7/2-15:12	5:06	2.75	±3.12	1.39454	1.94474
7/8-22:15 to 7/9-12:30	14:15	2.75	±2.30	0.61555	0.37890
7/13-17:45 to 7/14-13:00	19:30	3.75	±1.50	0.51691	0.26720
8/1-15:00 to 8/2-14:15	23:15	4.75	±4.06	0.82869	0.68673
8/18-17:30 to 8/19-14:45	21:15	0.25	±3.99	0.84114	0.75888
Total	113:29	17	±20.17		
Secesh River					
6/23-7:00 to 6/23-13:00	6:00	3.00	±4.05	1.16775	1.36364
6/25-14:45 to 6/26-13:30	22:45	28.00	±10.53	1.73743	3.01866
7/4-11:30 to 7/5-13:30	26:00	3.50	±6.55	1.31056	1.71757
7/20-0:00 to 7/20-7:00	7:00	3.00	±3.09	1.16837	1.36509
Total	61:45	37	±24.22		