

French Slough Fish Passage Monitoring Report October 6, 2005 through April 11, 2006

Under contract to the French Slough Flood Control (FSFC) District, Washington Trout developed and installed a digital video surveillance system to monitor upstream fish passage at the French Slough Flood Control Facility near Snohomish, Washington. The intent of this technical memo is to present a data summary for the first season of system operation. This memo represents the first of several fish passage reports to be completed.

During normal operation, fish passage was recorded using either one or two cameras, 24 hours a day. Nighttime recording was accomplished using infra-red lighting that is invisible to the fish passing through the artificial channel. The cameras, mounted above-water adjacent to the false weir in the artificial fish passage channel, recorded digital images to a digital video recorder (DVR) located inside an outbuilding approximately 100 feet away. The DVR was programmed to only record images when the cameras sensed movement in a pre-defined area.

During the first season of operation there were three distinct time periods during which the power source shut down in the outbuilding where the equipment is housed; in response, the French Slough Flood Control District created a dedicated source of electricity for the cameras and digital video recorder - the cause of the blackouts has since been identified and repaired. In addition, there were three time periods during which digital data from the DVR were not properly saved onto an external hard drive. Consequently, fish passage was not monitored for a total of 685 hours. These hours of lost record are represented graphically in Figure 2. Fish passage monitoring was operational during the remainder of the fish passage period of operation between October 6 and April 11.

Data review for the time period between October 6 and November 6, 2005, was performed by Washington Trout. Data review for the time period between November 7, 2005 and April 11, 2006 was performed by Neil Wheeler, FSFC Facility Manager. All data entry and analysis was performed by Washington Trout.

A total of 503 adult coho salmon (*Oncorhynchus kisutch*) were documented passing upstream above the false weir at the French Slough Flood Control facility between October 6, 2005 and April 11, 2006. Because blackouts occurred during the first month of monitoring, it is likely that over 600 adult coho actually entered the French Creek watershed during this study timeperiod.

While no other fish species were documented during the first season of monitoring, two mink (*Mustela vison*) and one muskrat (*Ondatra zibethicus*), were observed to pass through the fish passage facility.

Of the 503 coho salmon documented, adipose fin presence/absence was determined for 62%. In these cases, only 3% of the coho were ad-clipped; 97% had an intact adipose fin.



Figure 1. Representative photographs of individual coho passing through the facility during the 2005-2006 season. Additional photographs and movie clips are available upon request.

P.O. Box 402 • Duvall WA 98019 • 425-788-1167 • Fax 425-788-9634
wildfish@washingtontrout.org • www.washingtontrout.org

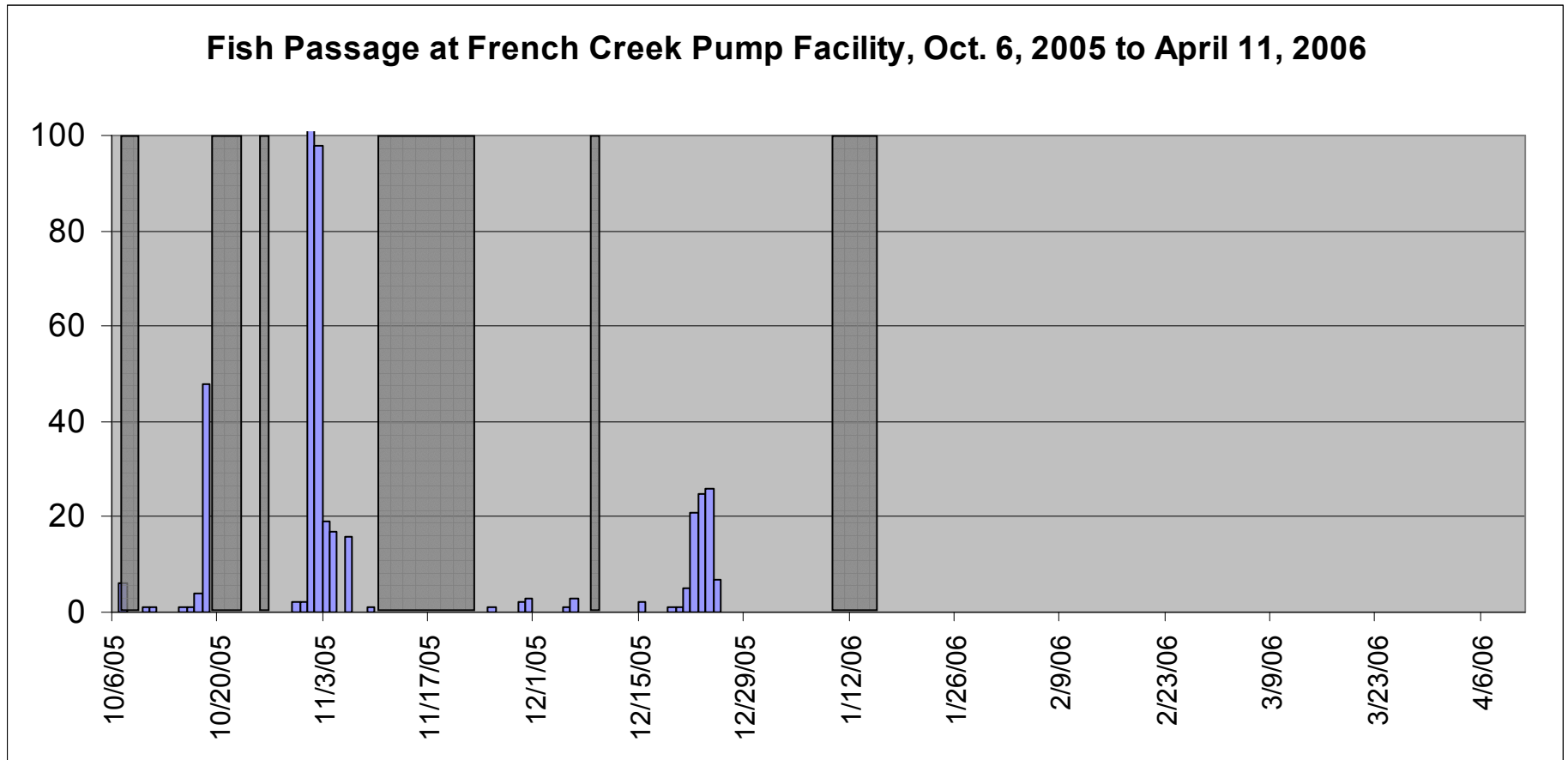


Figure 2. Daily total number of adult coho passing upstream above the false weir at the French Slough Flood Control facility. A total of 503 coho were photographed passing upstream. Only fish that crossed the weir were counted; because of the nature of the artificial channel and the location of the cameras, double-counting fish was not a possibility. The grey boxes depict the 685 hours of monitoring that were missed because of electrical problems at the Flood Control facility and/or data that were inadvertently lost during the backup process. It is likely that over 600 coho entered the French Creek watershed between October 6, 2005 and November 11, 2006. No species other than coho were observed, and no fish were observed after December 26th.

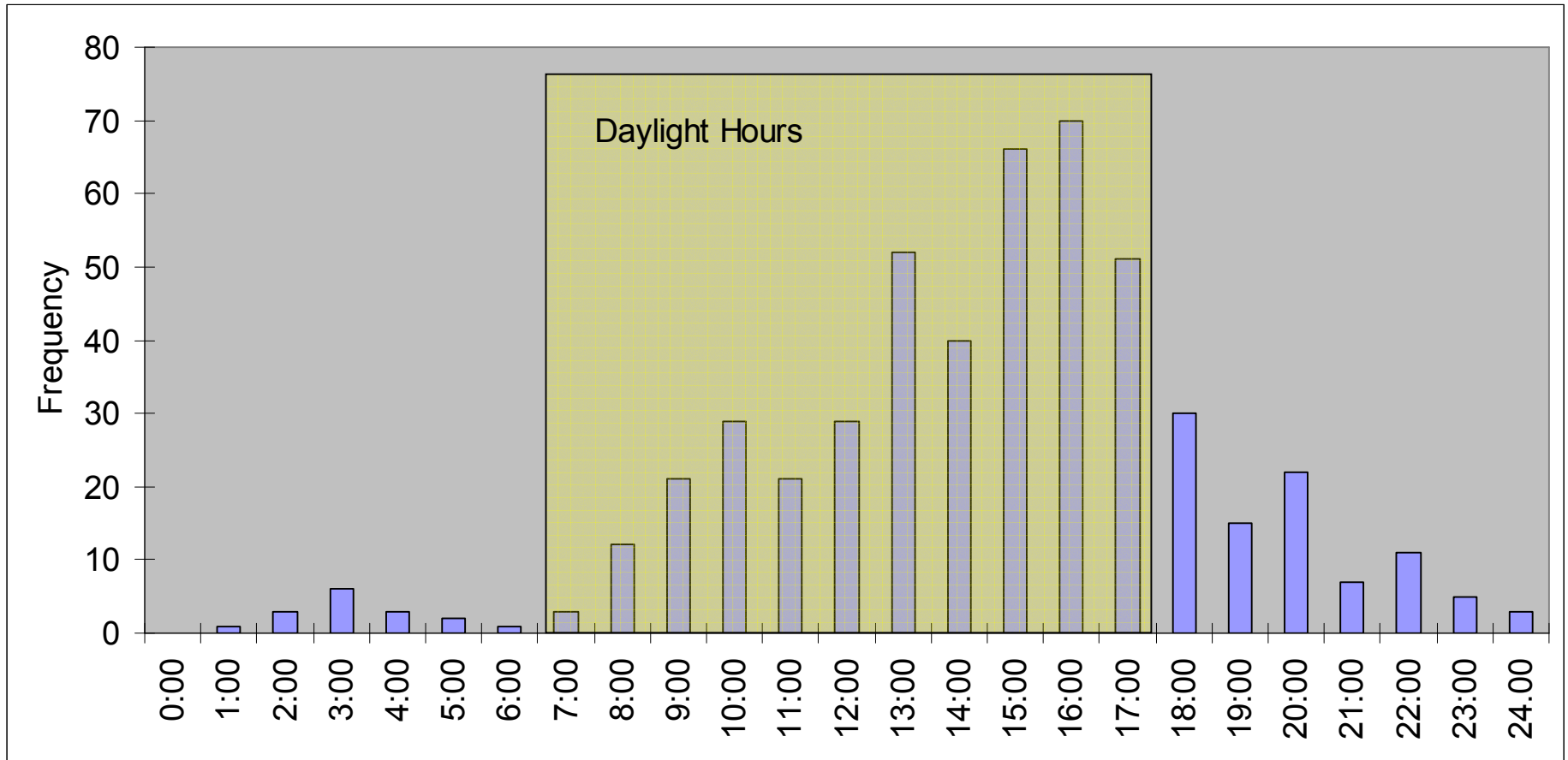


Figure 3. Adult coho passed upstream above the false weir at the French Slough Flood Control Facility during almost every hour of the day. Most upstream passage (78%) occurred during the daylight hours between 7am and 5pm.



Wild Fish Conservancy

N O R T H W E S T

S C I E N C E E D U C A T I O N A D V O C A C Y

French Slough Fish Passage Monitoring Report October 16, 2006 through April 14, 2007

January 29, 2008

Under contract to the French Slough Flood Control (FSFC) District, Wild Fish Conservancy developed and installed a digital video surveillance system to monitor upstream fish passage at the French Slough Flood Control Facility near Snohomish, Washington. The intent of this technical report is to present a data summary for the second season of system operation. This is the second annual French Slough fish passage report.

During normal operation, fish passage was recorded using either one or two cameras, 24 hours a day. Nighttime recording was accomplished using infra-red lighting that is invisible to the fish passing through the artificial channel. The cameras, mounted above-water adjacent to the false weir in the artificial fish passage channel, recorded digital images to a PC-based digital video recorder (DVR) located inside an outbuilding approximately 100 feet away. The DVR was programmed to only record “events” when the cameras sensed movement in a pre-defined area; when an event was triggered (by fish presence, for example) the DVR saved the footage of the event and the three seconds preceding the event.

During the second season of operation there were three distinct time periods totaling 129 hours during which the power source shut down in the outbuilding where the equipment is housed. In addition, there were two storm flood time periods, totaling 780 hours, during which the FSFC District turned the fish passage pumps off. These hours of no video record (power off) and no fish passage (pumps off) are represented by the gray bars in Figure 2. Fish passage and passage monitoring were operational during the remainder of the fish passage period of operation between October 16 and April 14.

Video footage review for the time period between October 16, 2006 and April 14, 2007 was performed by the FSFC District Facility Manager. All data entry, QA/QC, and analyses were performed by Wild Fish Conservancy.

A total of 1577 fish were observed to have passed over the false weir between October 16 and April 14. Of these, 1508 were identified as adult coho salmon (*Oncorhynchus kisutch*) and 69 were not clearly identifiable as coho. The 69 unidentified fish passing over the false weir were likely either coho jacks, cutthroat, or possibly steelhead; the video quality precludes definitive identification.

Because an electrical blackout occurred on 10/19/2006 during a significant period of upstream migration, it is likely that over 1600 adult coho actually entered the French Creek watershed during the study timeperiod.

Of the 1508 definitive coho salmon documented, adipose fin presence/absence was determined for 95%. For those 1428 coho, only 7 were adipose-clipped.



Figure 1. An unidentified salmonid, likely either a cutthroat trout or steelhead, migrating upstream through the facility in March 2007. Additional photographs and movie clips are available upon request.

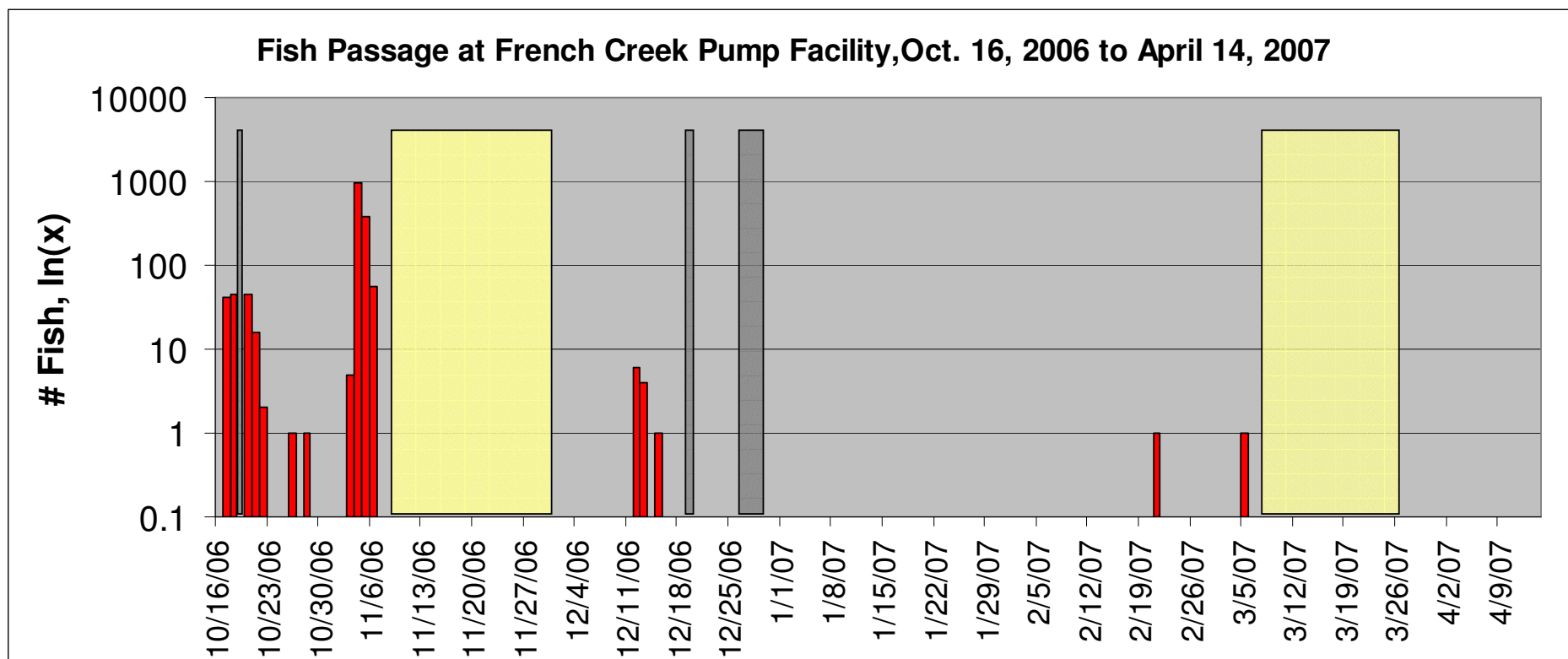


Figure 2. Daily total number of fish passing upstream above the false weir at the French Slough Flood Control facility. A total of 1577 fish were photographed passing upstream, of which 1508 were clearly adult coho salmon. Only fish that crossed the weir were counted; because of the nature of the artificial channel and the location of the cameras, double-counting fish was not a possibility. The grey boxes depict the 129 hours of monitoring that were missed because of electrical problems at the Flood Control facility. The yellow boxes depict 780 hours during which the FSFC District turned the fish passage pumps off because of high flows (Snohomish River flooding) at the facility.

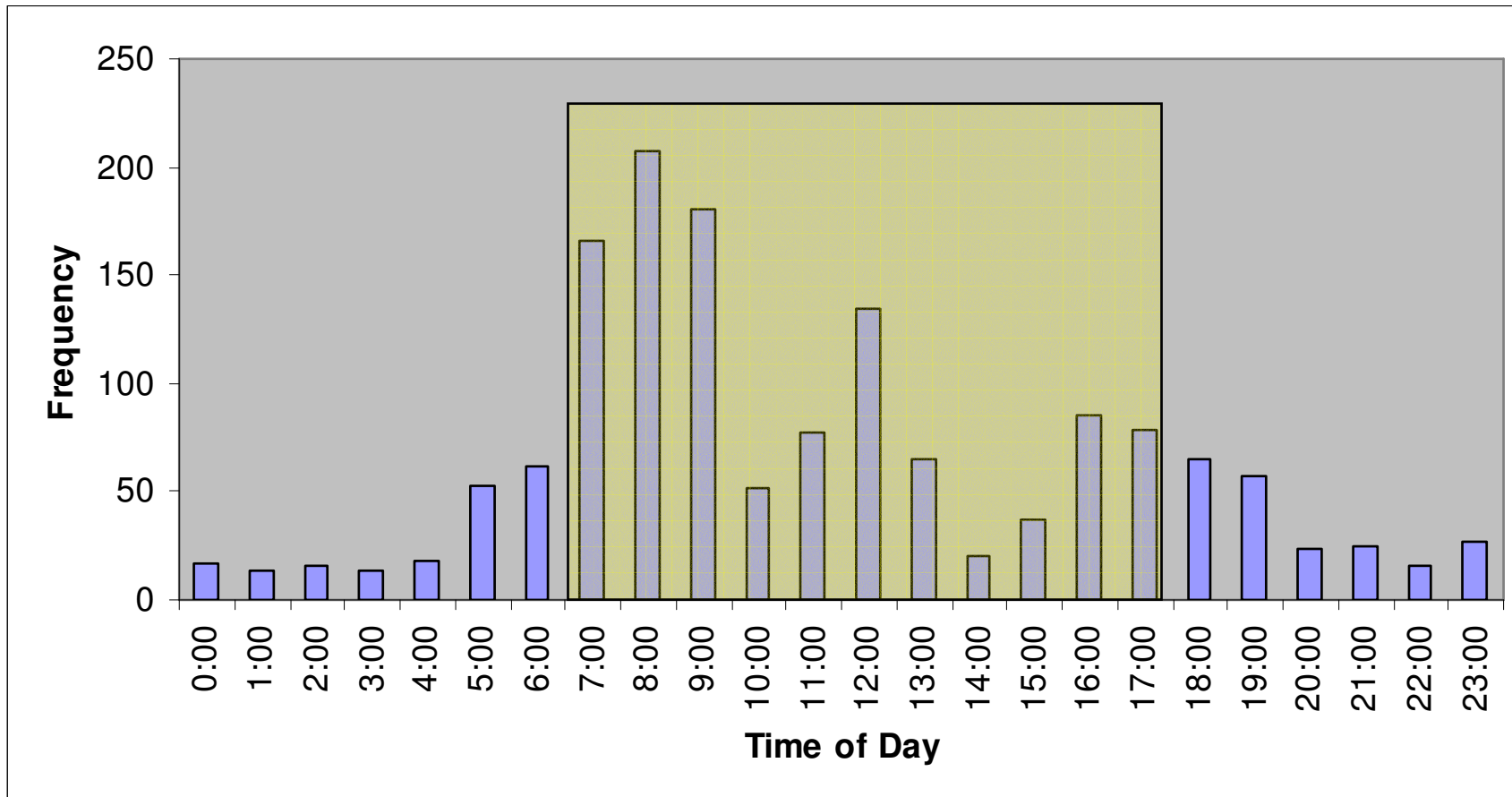


Figure 3. Adult coho passed upstream above the false weir at the French Slough Flood Control Facility during every hour of the day. Most upstream passage (73%) occurred during the (approximate) daylight hours between 7am and 5pm.