Upper Skeena and Kispiox River

Juvenile Steelhead Surveys

1999

C. J. Williamson

British Columbia
Ministry of Water, Land and Air Protection
Fisheries Branch
Skeena Region
PO Box 5000
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Skeena Fisheries Report SK #137

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1.0 Introduction

In 1999, the Ministry of Environment, Lands and Parks (MELP) surveyed portions of the Upper Skeena River and Kispiox Rivers during September 1999 for juvenile steelhead fry and parr abundance. This report summarizes the results of those surveys and provides a basic comparison of this data with data collected in historical surveys. A separate appendix volume has been prepared presenting location maps and photographs of each site.

1.1 Background

Previous detailed juvenile steelhead (*Onhorhynchus mykiss*) index sampling was conducted in the Kispiox River during the period 1980 through 1988 and 1990-1991 (Stuart, 1981; Tredger, 1982, 1983, 1984, 1985, 1986, 1987, 1988; Ron Ptolemy provided data for 1990 and 1991 from M.W.L.A.P. files). Historically, a series of index sites were established on the Kispiox River from its confluence with the Skeena to the Sweetin and Nangeese Rivers. These tributaries contain the most upstream, important steelhead spawning areas in the Kispiox River system. Between 1980 and 1991, up to 35 sites were sampled each year for juvenile steelhead biomass and abundance within the Kispiox system. However not all sites were sampled in all years due to freshets. Historical sampling was generally conducted in late August to mid September (Appendix 6 Table 4) during moderate to high flows. Mean annual discharge (MAD) at Kispiox River Water Survey of Canada Station (08EB004 – 1966-present) is 45.1 m^3/s and mean monthly discharge for August and September are 37.3 and 38.2 m^3/s (83-85% MAD).

The study of juvenile steelhead utilization on the mainstem Skeena River has been very limited compared to historical sampling in the Kispiox River. A series of boat shocking surveys were completed in on the Skeena River in 1983, however enclosure nets were not used; thus the calculation of area based population estimates was not possible (Tredger, 1984). Adult steelhead escapement to the Skeena River has not been directly measured; however, an index of migrating adults is available from Fisheries and Oceans Canada (DFO). Since 1955, DFO has operated the gillnet test fishing station, the Tyee Test Fishery, near the mouth of the Skeena River. Estimates of adult steelhead escapement derived from these surveys can be compared with estimates of juvenile steelhead abundance collected at index sites in the Kispiox and Skeena Rivers.

In this report, rainbow trout fry and parr captured in the Kispiox and Skeena rivers are referred to as steelhead. Steelhead and resident rainbow trout juveniles (*O. mykiss*) cannot be readily distinguished in the field, however, adult steelhead predominate in the spawning areas. Juvenile bull trout (*Salvelinus confluentus*) and

Dolly Varden (*S. malma*) are also not readily distinguished in the field, therefore both species are designated as char in this report.

1.2 Objectives

The objectives of the 1999 juvenile steelhead stock assessment were as follows:

- To provide estimates of standing stock abundance of steelhead/rainbow trout fry and parr at established index stations within the Kispiox (18 sites) and Skeena rivers (20 sites).

- To collect biological characteristics (age, length, weight) of fish within the sample sites.

- To collect habitat descriptions and hydraulic information at the sample sites consistent with methods provided by MELP so that this information can be used to evaluate spatial variability in juvenile abundance and to test and upgrade the Skeena Steelhead Carrying Capacity Model (Tautz et al. 1992).

- To compare the estimated 1999 fish abundances to estimates from previous work.

- To compare juvenile abundance estimates corrected for habitat suitability (Weighted Usable Area) to the cumulative steelhead index from the Tyee test fishery and steelhead harvest analysis (STA) data.

1.3 Acknowledgements

This program was funded by the Habitat Conservation Fund and administered by Ministry of Environment under the direction of Paul Giroux with technical input from Ron Ptolemy (B.C. Fisheries, Victoria). Ron Ptolemy completed much of the comparative analysis of the historical data. Paul Giroux, Ron Ptolemy, Gordon Haas, Dana Atagi, Mark Beere, Ron Tetreau, George Schultze, Jeff Lough, Andy Wilt and Brian Fuhr conducted the field surveys. Paul Giroux and Ron Ptolemy provided a technical review of this document.

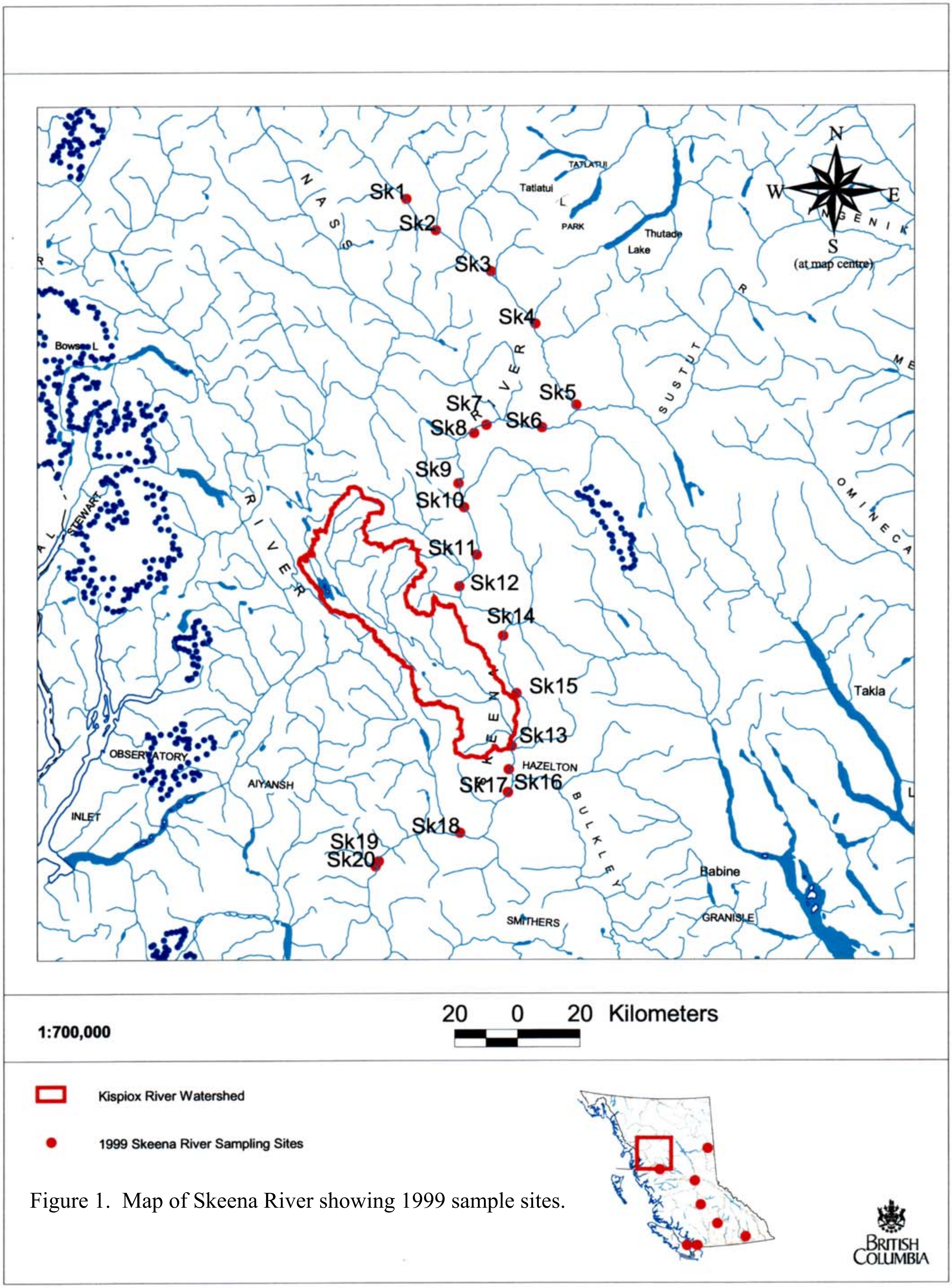

Figure 1. Map of Skeena River showing 1999 sample sites.

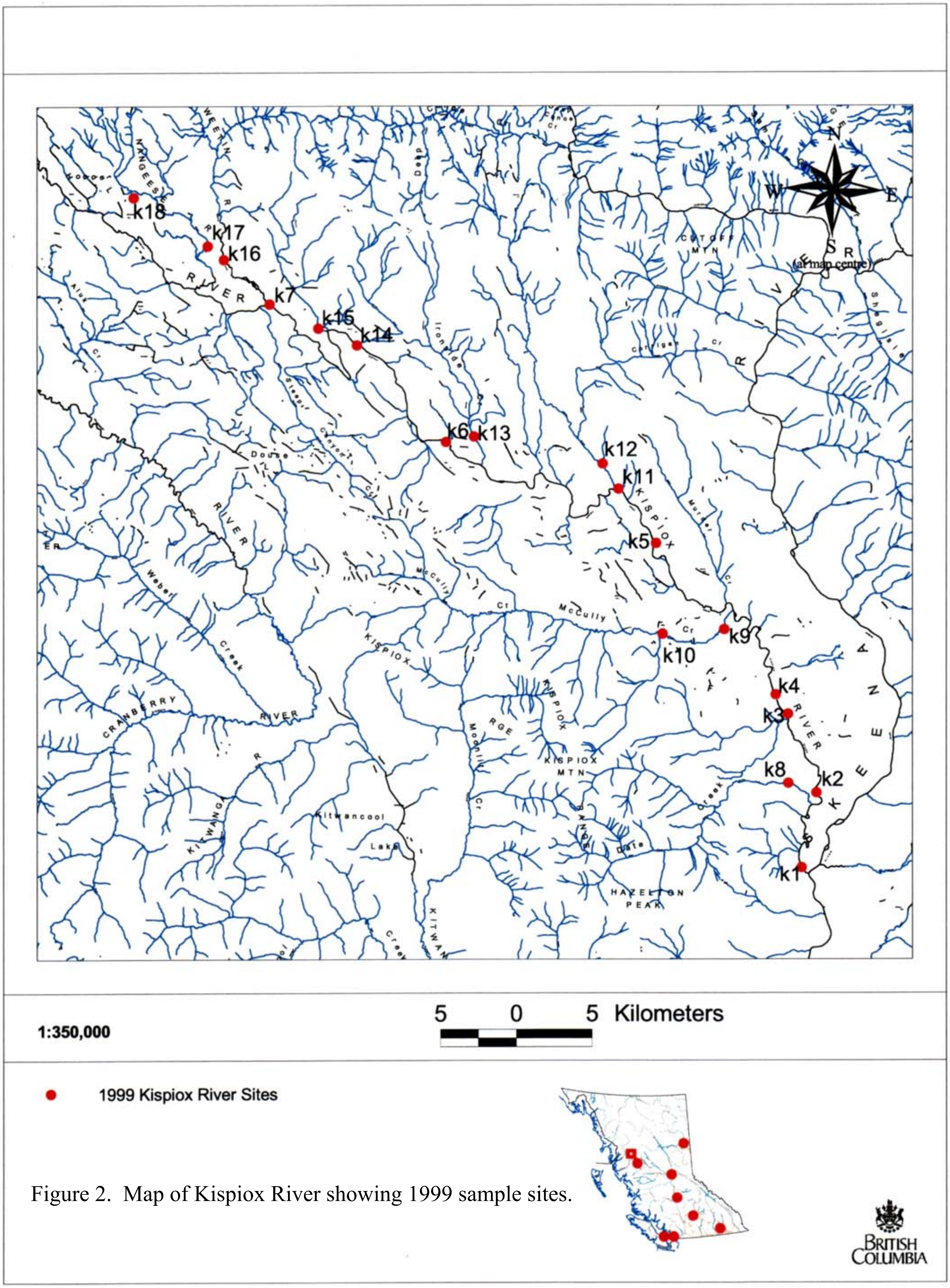

Figure 2. Map of Kispiox River showing 1999 sample sites.

2.0 Methods

2.1 1999 Surveys

Surveys in the Kispiox were completed between September 8 and 27th, 1999 while the Skeena surveys were completed between September 17 and October 13th, 1999. Streamflow conditions were low enough to allow river access for the surveys in both systems. Both studies were completed during periods of moderate, declining flows following a period of wet weather in late August 1999.

A total of 18 and 20 index sites were sampled in the Kispiox and Skeena Rivers respectively (Figures 1 and 2). A helicopter was used to access most sites in the Skeena River. A few of the sites on the lower Skeena River were accessible from the road or by riverboat. All sample sites ranged in length from 8.6m to 40.5 m, with a mean length of 14.7 m. Stopnets were used to completely enclose each site where possible. For smaller tributaries and side-channels, the nets spanned the top and bottom end of each site (Figure 3). For most main channel locations a minimum of 30 m of stopnet, supported with bipods, was used to enclose a section of the stream margin (Figure 4). At nine mainstem sites on the Skeena and Kispiox Rivers partial enclosures were used where site margin furthest from shore bordered on higher velocity flow (Figure 5). Stream margins were typically 5 to 7 m in width. Survey sites within the mainstem Skeena River were located in shallow stream margin habitat, dominated by cobble substrates. These sites were established at approximately 25-km intervals along the Skeena River. Ease of physical access and the availability of suitable juvenile salmonid habitat were also used as criteria to determine the location of specific index sites.

Figure 3. Full enclosure of stream channel at Kispiox River Site K4 (Upstream of 17 mile Bridge).

Figure 4. Full enclosure of stream margin at Site SK7 (Skeena River, 32 km downstream of the Sustut River).

Figure 5. Partial enclosure of stream channel at Skeena River Site SK1 (14 km upstream of the Kluatantan River).

Sample crews worked through each site at least twice with a Smith-Root BP15 gas-powered, or a Smith-Root MODEL battery powered electroshocker. The two-step removal method was used to estimate fish populations from catches within these sites (Seber and LeCren 1967). If a suitable declining catch (i.e., if between 70% and 80% of total steelhead fry sampled were captured on the first pass) was not obtained, a third pass was made. All fish were sorted by species, counted, fork lengths measured to the nearest mm, and returned to the stream after sampling. At least 30 steelhead and 30 chinook fry were measured at each site when available.

Weights for biomass estimates were obtained from 593 fish in the Kispiox and 458 fish in the Skeena River using a Tanita Model 1479 digital scale. Steelhead and chinook fry, steelhead parr weights and, coho and char weights were obtained from a range of sites in both the Skeena and Kispiox (Appendix 1 and 2). Scales for aging were retained from a range of steelhead parr sizes in the two systems. In total, 28 and 30 scales were retained from steelhead parr in the Kispiox and Skeena rivers respectively (Appendix 5 Tables 1 and 2).

Sample site areas were calculated from a length and series of width measurements collected at each site. In locations where it was impractical to use a tape measure, an Impulse 200 laser range finder (Technology Inc.) was used to establish channel widths. MOE/DFO Stream Survey Forms were completed and photos were retained for each site. In addition to the physical habitat information, water temperature, pH, total dissolved solids (TDS) and bed material characteristics (D50, Dmax) were recorded. Areas within each site that were heavily utilized by steelhead fry and parr were also defined (Appendix 1 and 2).

Hydraulic information was collected along a transect line established at the widest section of the site. Water depth, mean velocity and a bed material descriptor were recorded at 0.5 m intervals along the transect line to the outside edge of the net. Additional measurements were made beyond this point at 1-m intervals to a point that the channel could no longer be safely waded. A Marsh McBirney resistivity flowmeter was used for all of the Kispiox and Skeena River sites. All hydraulic information was entered onto weighted usable area (WUA) spreadsheets provided by Ron Ptolemy (B.C. Fisheries, Victoria) (Appendix 3 and 4). Weighted usable areas (WUA) analyses are used because fish distributions in streams are non-random and are typically clumped, with fish showing associations with preferred habitat conditions linked to body size, species and age. WUA analyses can be used to obtain standardized fish habitat capability estimates that allow for comparisons of sample sites between years and habitat conditions despite clumped distributions. Thus, WUA analysis can reduce bias in capability estimates that is due to differences in habitat suitability and usage based on annual changes in site morphometry and river discharge. For this report WUA calculations are based on probability density functions that (Habitat suitability index curves (HSI)) describe species and life stage specific suitable depth and velocity habitat criteria (Appendix 3 and 4). HSI curve data for steelhead fry suggest that suitable depths are 1-25 cm and limited use at depths>40 cm. Suitable mean water column velocities (cm/s) are 1-20 with zero use beyond 70 cm/s.

2.1 Analysis of Historical Kispiox River Fry Index Data

Results for the Kispiox River in 1999 were compared with WUA standardized density estimates from data collected from 1980-1988, 1990-1991. However, historical production estimates for the Kispiox River have been based on simple calculations of fish caught per unit area. Furthermore, electrofishing surveys prior to 1986 were generally exploratory and synoptic in nature and detailed habitat measurements were not collected (Ron Ptolemy pers. comm.). Data collected following 1986 included detailed depth/velocity transect and detailed habitat information. Thus, estimates of steelhead fry density collected prior to 1986 were corrected by Ron Ptolemy using percent WUA estimates derived from habitat data where available (including mean depth, mean velocity, depth profile) and site photos (Appendix 6 Table 3). These values were checked for accuracy against similar habitat conditions where WUA was calculated from a detailed transect. Estimates of fry density collected after 1986 were corrected using the same habitat suitability curves used for the 1999 data (ex. Appendix 3). Population estimates included in this analysis are presented in Appendix 6 Table 3. Simple linear regression was used to compare corrected fish per unit (FPU) estimates with cumulative steelhead index from the Tyee test fishery and steelhead harvest analysis (STA) data. To reduce the bias in FPU estimates associated with calculating the mean of several sample means, in each year of sampling, the geometric mean capability estimate for the mainstem Kispiox was used instead of the arithmetic mean (Appendix 6 Table 3).

To assess potential maximum fish densities for the Kispiox River and Cullon Creek and to compare the observed densities against the predicted values, a log-log scatter plot (Allen Plot) of density versus size at age for steelhead, coho and chinook was compared against a predicted density envelope based on total alkalinity. For stream dwelling salmonids, density can be limited by territory size and food availability where populations self-thin along a maximum density (maximum biomass/ habitat unit) envelope in suitable habitats (Dunham and Vinyard, 1997). The predicted density envelope was calculated from a model developed by (Ptolemy et al., 1993) that uses total alkalinity and the average mean weight of the size class or age of interest as input parameters. Total alkalinity was derived from 22 separate water samples and different flow conditions from the Kispiox Village Water Survey of Canada (WSC) survey station. The model is as follows: where, ALK= Total Alkalinity; FPU = Fish per unit (Unit = 100m^2) .

$$\text{FPU} = [36.3*(\text{ALK})^{0.5}]/\text{Size (g)}.$$

3.0 Results and Discussion

This section has been separated into the results for the Kispiox and Skeena rivers.

3.1 Kispiox River

A total of 18 sample sites were located on the Kispiox River including 8 sites on the mainstem river and 10 tributary sites (Figure 2).
Mainstem sites were comprised of 767.3 m^2 of habitat in Kispiox River to its confluence with the Skeena River (Table 1). A total of 759.1 m^2 of habitat was sampled in the tributaries. Specific site descriptions and catch data for each site are presented in Appendices 1 and 2.

3.1.1 Kispiox River Catch Composition

3.1.1.1 Mainstem Catch Composition and Distribution

A total of 750 fish were captured in the mainstem Kispiox River sites in 1999 (Table 2 and 3). The catch was 67.6 % steelhead most of which were fry (96.9 % of total steelhead).

Table 1. Fish species composition based on catch estimate in the mainstem Kispiox River, Kispiox tributary sites and Skeena River for 1999.

SPECIES	MAINSTEM 1999	KISPIOX TRIBUTARIES 1999	Total 1999
Steelhead 0+	492	285	777
(%)	96.9	86.9	236.9
Steelhead 1+	10	14	24
(%)	2.0	4.3	7.3
Steelhead >1+	5	29	34
(%)	1.0	8.8	10.4
TOTAL Steelhead	507	328	835
(% of Total)	67.6	54.2	61.6
Chinook	137	66	203
(%)	18.3	10.9	15.0
Coho	17	77	94
(%)	2.3	12.7	6.9
Char*	50	134	184
(%)	6.7	22.1	13.6
LNC	25	0	25
(%)	3.3	0.0	1.8
MW	14	0	14
(%)	1.9	0.0	1.0
Other	0	0	0
(%)	0.0	0.0	0.0
TOTAL	750	605	1355
AREA (m*m)	767	759	1526
LENGTH (m)	202	102	305

* Mix of Dolly Varden char and bull trout.

LNC- Longnose dace, MW- mountain whitefish

Steelhead were the most abundant fish sampled in the survey (67.6% of the catch) and were found at all 8 mainstem sample site (Table 4). Chinook (18.3%) and char (6.7%) juveniles were the next most abundant fish captured (Table 2).

Both steelhead and chinook fry (*O. tshawytscha*) were present at all of the mainstem Kispiox River sites indicating a widespread distribution throughout the mainstem river from Nangeese River downstream to the Skeena River (Table 3).

Steelhead parr were also widely distributed throughout the system and were captured at 6 of the eight-mainstem sites, however they were always captured at low densities. Char were absent in or at very low densities in the catches from the seven of the eight Kispiox mainstem sites (Table 3). The highest density of char was found at Site K7, (Kispiox Sweetin confluence) where forty-five char fry (<56 mm) were caught. The high density of young of the year fry indicates that this area may contain important char spawning habitat. Coho (*O. kisutch*) juveniles were found at five out of eight mainstem sites, however their densities were always low. Longnose dace (*Rhinichthys cataractae*) and mountain whitefish (*Prosopium williamsoni*) were captured in small numbers at three and four sample sites respectively (Table 3).

Table 2. Catch composition for the Kispiox River.

Species	Age Class	Number	Percent	Frequency of Occurance
			(%)	(%)
Steelhead	0+	777	57.3	94.4
Steelhead	1+	24	1.8	61.1
Steelhead	>1+	34	2.5	50.0
Chinook	0+	203	15.0	72.2
Coho	0+	94	6.9	77.8
Char*	all	184	13.6	61.1
LNC	all	25	1.8	16.7
MW	all	14	1.0	22.2
Other	all	0	0.0	0.0
Total		1355	100	
Area (m*m)		1526.4		
Length (M)		304.8		
Number of Sites		18		

* Mix of Dolly Varden char and bull trout.
LNC- Longnose dace, MW- mountain whitefish

Table 3. Site and species specific catch composition for the Kispiox River.

Site ID	RBT 0+	RBT 1+	RBT >1+	Chinook 0+	Coho 0+	Char all	LNC all	MW all	Other all	All Species
k1	14	0	0	11	0	0	0	0	0	25
k2	29	4	2	38	6	0	8	8	0	95
k3	121	1	1	22	0	0	13	1	0	159
k4	135	0	0	31	2	0	0	4	0	172
k5	24	1	1	6	7	0	0	0	0	39
k6	15	1	0	11	0	1	0	0	0	28
k7	65	2	1	18	1	45	0	1	0	133
k14	89	1	0	0	1	4	4	0	0	99
Mainstem	492	10	5	137	17	50	25	14	0	750
k8	23	1	1	5	0	11	0	0	0	41
k9	15	0	2	14	2	5	0	0	0	38
k10	59	10	5	15	20	47	0	0	0	156
k11	45	0	0	0	9	0	0	0	0	54
k12	64	1	9	2	28	1	0	0	0	105
k13	53	0	0	0	5	0	0	0	0	58
k15	0	1	12	0	2	12	0	0	0	27
k16	4	0	0	3	1	11	0	0	0	19
k17	10	1	0	0	1	20	0	0	0	32
k18	12	0	0	27	9	27	0	0	0	75
Tributaries	285	14	29	66	77	134	0	0	0	605
Total	777	24	34	203	94	184	25	14	0	1355

* Mix of Dolly Varden char and bull trout.
LNC- Longnose dace, MW- mountain whitefish

3.1.1.2 Kispiox Tributary Catch Composition and Distribution

A total of 605 fish were captured within tributary sites of which 54.2 % were steelhead juveniles; while chinook juveniles comprised 10.9% of the catch (Table 2). Steelhead fry were captured at all of the tributary sites with the exception of site K15, Clifford Creek (Table 3). A greater number of the fish captured in tributary sites were steelhead one year old or greater when compared to the mainstem sites (Table 3). The sampling technique used likely biased the catch toward smaller fish for most of the sites, particularly at mainstem locations where there was less suitable cover for larger fish. Often a considerable amount of time was spent wading in the vicinity of the collection site while placing stopnets. Thus larger fish, particularly steelhead parr, may have moved away from the sites before each area was completely enclosed. Tributaries sites were more often enclosed completely with nets, compared to mainstem sites. Tributary sites more often included deeper pool type habitats. Stream widths, depth, substrate size and water velocity were factors that constrained where and how stopnets could be placed at mainstem sites.

Chinook fry were present in 6 tributary sites and were found at lower densities than at mainstem sites (Table 3). Coho were captured in 9 of the 10 tributary sites (Table 3). Coho comprised a higher proportion of the tributary site catch, (10.9% of the total sample) compared to mainstem sites (2.3% of the total catch). Char also comprised a higher proportion of the overall tributary catch (22.1%) compared to the mainstem Kispiox River (6.7%) in 1999. These data suggest that Kispiox River coho and char spawning primarily occurs in the tributaries.

3.1.2 Kispiox River Densities

3.1.2.1 Mainstem Kispiox River

Steelhead Fry and Parr Densities - Mainstem

Steelhead fry densities in the mainstem sites in the Kispiox River averaged 67.6 fry/100 m^2 (Table 4). Fry densities ranged from 14.5 to 143.9 fry/ 100 m^2. These densities are within the range reported for the period 1980 through 1991, when average estimated densities ranged from 9-to 184-fry/100 m^2 (Table 8). Parr densities in 1999 averaged 1.8 parr/100m^2 (Table 5) with a range from zero to 3.9 parr/100m^2. Weighted usable area standardized fish densities ranged from 23.2 to 301.7 fish/ 100 m^2 for fry and 0-7.9 fish/ 100 m^2 for parr. Habitat suitability ranged from 25.2 to 82.0 % fry and 31.2 to 76.6 % for parr at mainstem sites. (Appendix 1).

3.1.2.2 Kispiox River Tributaries

Steelhead Fry and Parr Densities - Tributaries

Juvenile steelhead fry densities in 10 tributaries sample sites are presented in Table 4 with more detailed information presented for each site in Appendix 1. The mean steelhead fry density for Kispiox River tributaries was 49.1 fry/100 m^2. The highest steelhead fry densities were estimated in Ironside Creek (149.5 fry/100 m^2) and Upper Cullon Creek (114.3 fry/100 m^2). These estimates are more than double or triple those recorded for other tributary and mainstem sites in 1999. Fry densities in 1999 were within the range (0-540 fry/ 100 m^2) reported for other years (Appendix 6 Table 1).

Tributary parr densities ranged from 0-24.4 parr/100 m^2 (mean 5.3 parr/100 m^2) (Table 5). Clifford and Ironside Creeks had by far the highest densities. Excluding these two sites, the mean tributary parr density would have been 1.5 parr/100 m^2, which is similar to the mainstem sites (Table 4). Previously, tributary parr densities have ranged from 0-145 parr/100 m^2 (Appendix 6 Table 1). Both of the Cullon Creek sites have previously supported some of the highest parr densities in Kispiox tributaries.

Weighted usable area standardized fish densities ranged from 0 to 299.6 fish/ 100 m^2 for fry and 0 to 133.9 fish/ 100 m^2 for parr. Habitat suitability ranged from 22.2 to 78.7 % for fry and 18.2 to 79.0 % for parr at tributary sites (Appendix 1).

Table 4. Summary of juvenile steelhead density estimates as well as weighted usable area (WUA) corrected density estimates in the Kispiox River for 1999. 95% confidence intervals for means are provided in brackets.

SITE ID	Site Name	FRY/100 M^2 1999 Fry #/100 m^2	WUA FRY/100 M^2 1999 Fry #/100 m^2	PARR /100 M^2 1999 Parr #/100 m^2	WUA PARR/100 M^2 1999 Parr #/100 m^2
k1	Downstream Kispiox Village	14.5	23.2	0.0	0.0
k2	Mainstem @ Potato Patch	36.7	44.8	2.5	7.9
k3	Mainstem @ Rodeo Grounds	124.3	301.7	2.0	4.7
k4	Upstream 17 mile Bridge	74.5	104.8	0.0	0.0
k5	Upper Kispiox Forest Rec Site	50.0	198.5	3.9	5.1
k6	Upstream Mitten Bridge	29.4	35.5	1.5	2.6
k7	Kispiox Sweetin Confluence	67.5	164.3	2.8	6.0
k14	Mainstem Downstream Corral Creek	143.9	244.7	1.6	5.0
Mainstem Mean		67.6 (38.2)	139.7 (87.11)	1.8 (1.1)	3.9 (2.4)
k8	Date Creek Upstream Bridge	34.3	65.2	3.0	8.1
k9	McCully Upstream Bridge #1	28.7	69.5	3.6	16.3
k10	Upper McCully #2	28.3	37.1	4.5	14.3
k11	Upstream Bridge on Lower Cullon	77.5	120.1	0.0	0.0
k12	Upper Cullon	114.3	145.2	16.4	90.2
k13	Downstream Bridge Ironside Creek	149.5	299.6	0.0	0.0
k15	Downstream Clifford Culvert	0.0	0.0	30.0	133.9
k16	Downstream Sweetin river Bridge	16.7	26.0	0.0	0.0
k17	Nangeese River Bridge	15.0	67.6	1.4	1.8
k18	Upper Nangeese	27.4	78.7	0.0	0.0
Tributaries Mean		49.1 (34.8)	90.88 (60.6)	5.9 (7.0)	26.5 (33.4)
MEAN (all sites)		57.4 (23.3)	112.6 (46.9)	4.0 (3.7)	16.4 (17.9)

3.1.3 Kispiox River Steelhead Biomass Estimates

3.1.3.1 Steelhead Fry and Parr

Biomass estimates for steelhead fry in the mainstem Kispiox reaches ranged from a 22.7 to 55.8 g/100 m^2 with the lowest estimates recorded at site K6 (Upstream Mitten Bridge; Table 4). The observed biomass values are within the range reported for previous years (0-150 g/m^2) (Appendix 6 Table 2). The mean for all 1999 mainstem sites combined was 42.3 g/100 m^2.

Parr biomass estimates were available for three sites (K2, K6, K7; Table 5). Mainstem parr biomass ranged from 4.2 to 8.7 g/100 m^2 (mean 6.7 g/100 m^2). In previous years estimates have ranged from 0 to 139 g/100 m^2 (Appendix 6 Table 2).
Detailed estimates for each site and for all species are presented in Appendix 1.

Weights were not collected from all fish at all sites (Table 6) and in some cases few fish were captured and weighed resulting in small sample sizes. One or two particularly large or small individuals may bias biomass estimates, particularly where there are small sample sizes for parr. Caution must therefore be used in interpreting this data.

Table 5. Summary of juvenile steelhead biomass estimates as well as weighted usable area (WUA) corrected biomass estimates in the Kispiox River for 1999. 95% confidence intervals for means are provided in brackets.

SITE ID	Site Name	FRY/100 M^2 1999 Fry g/100 m^2	WUA FRY/100 M^2 1999 Fry g/100 m^2	PARR /100 M^2 1999 Parr g/100 m^2	WUA PARR/100 M^2 1999 Parr g/100 m^2
k1	Downstream Kispiox Village	-	-	-	
k2	Mainstem @ Potato Patch	38.0	46.3	4.2	13.5
k3	Mainstem @ Rodeo Grounds	-	-	-	
k4	Upstream 17 mile Bridge	55.7	78.3	-	
k5	Upper Kispiox Forest Rec Site	-	-	-	
k6	Upstream Mitten Bridge	22.7	27.4	7.2	12.8
k7	Kispiox Sweetin Confluence	52.8	128.6	8.7	18.5
k14	Mainstem Downstream Corral Creek	-	-	-	
Mainstem Mean		42.3 (24.2)	70.2 (70.4)	6.7 (5.3)	14.9 (7.7)
k8	Date Creek Upstream Bridge	18.7	35.5	20.1	54.8
k9	McCully Upstream Bridge #1	23.6	57.1	103.9	470.1
k10	Upper McCully #2	20.7	27.1	30.6	97.5
k11	Upstream Bridge on Lower Cullon	75.5	117.1	-	
k12	Upper Cullon	118.4	150.4	139.9	768.6
k13	Downstream Bridge Ironside Creek	116.3	233.0	-	
k15	Downstream Clifford Culvert	-	-	298.5	1332.6
k16	Downstream Sweetin river Bridge	9.6	14.9	-	
k17	Nangeese River Bridge	11.4	51.3	8.2	10.4
k18	Upper Nangeese	19.7	56.5	-	
Tributaries Mean		46.0 (34.5)	82.6 (54.7)	99.6 (116.0)	455.7 (546.2)
MEAN (all sites)		44.8 (22.7)	78.7 (37.8)	76.7 (85.8)	308.7 (358.8)

Table 6. Summary of juvenile steelhead sampled for weight.

ID	Site Name	# of Fry Sampled	# of Fy Sampled for weight	% of Fry sampled for weight	# of Parr Sampled	# of Parr Sampled for weight	% of Parr sampled for weight
k1	Downstream Kispiox Village	14	0	0	0	0	-
k2	Mainstem @ Potato Patch	29	21	72	6	0	0
k3	Mainstem @ Rodeo Grounds	121	0	0	2	0	0
k4	Upstream 17 mile Bridge	135	27	20	0	0	-
k5	Upper Kispiox Forest Rec Site	24	0	0	2	0	0
k6	Upstream Mitten Bridge	15	15	100	1	1	100
k7	Kispiox Sweetin Confluence	65	34	52	3	0	0
k14	Mainstem Downstream Corral Creek	89	0	0	1	0	0
Mainstem Total		492	97	20	14	1	7
k8	Date Creek Upstream Bridge	23	9	39	2	2	100
k9	McCully Upstream Bridge #1	15	13	87	2	2	100
k10	Upper McCully #2	59	19	32	15	11	73
k11	Upstream Bridge on Lower Cullon	45	24	53	0	0	-
k12	Upper Cullon	64	39	61	10	10	100
k13	Downstream Bridge Ironside Creek	53	27	51	0	0	-
k15	Downstream Clifford Culvert	0	0	-	13	11	85
k16	Downstream Sweetin river Bridge	4	4	100	0	0	-
k17	Nangeese River Bridge	10	10	100	1	0	0
k18	Upper Nangeese	12	11	92	0	0	-
Tributaries Total		285	156	55	43	36	84
Total (all sites)		777	253	33	58	37	64

3.1.4 Kispiox River steelhead fork length and age summary

Figure 6 summarizes the length-frequency distribution for 836 steelhead sampled in the Kispiox River sites in 1999. The approximate age class break-off for 1999 is shown based on age-scale analyses from 29 steelhead parr (Appendix 5 Table 1). The parr sampled were all age 1+ and 2+ fish. It is suspected that the sampling methods used for this study are normally not effective for capturing larger, older parr that tend to utilize habitat in deeper and faster water than was effectively sampled.

Kispiox River fry averaged 41.1 mm in length (95% C.I.; 40.7-41.5 mm; n=779) and parr averaged 89.4 mm (95% C.I.; 86.0-92.8 mm; n=53). Fry from mainstem sites were larger and than those from tributary sites (ANOVA, $P < 0.0001$) (Table 7). However the difference was small (1.5 mm). Fry from Date Creek (mean 35 mm) were smaller than fry found at other tributary sites (Table 7) and may have contributed to the observed difference between tributary and mainstem sites.

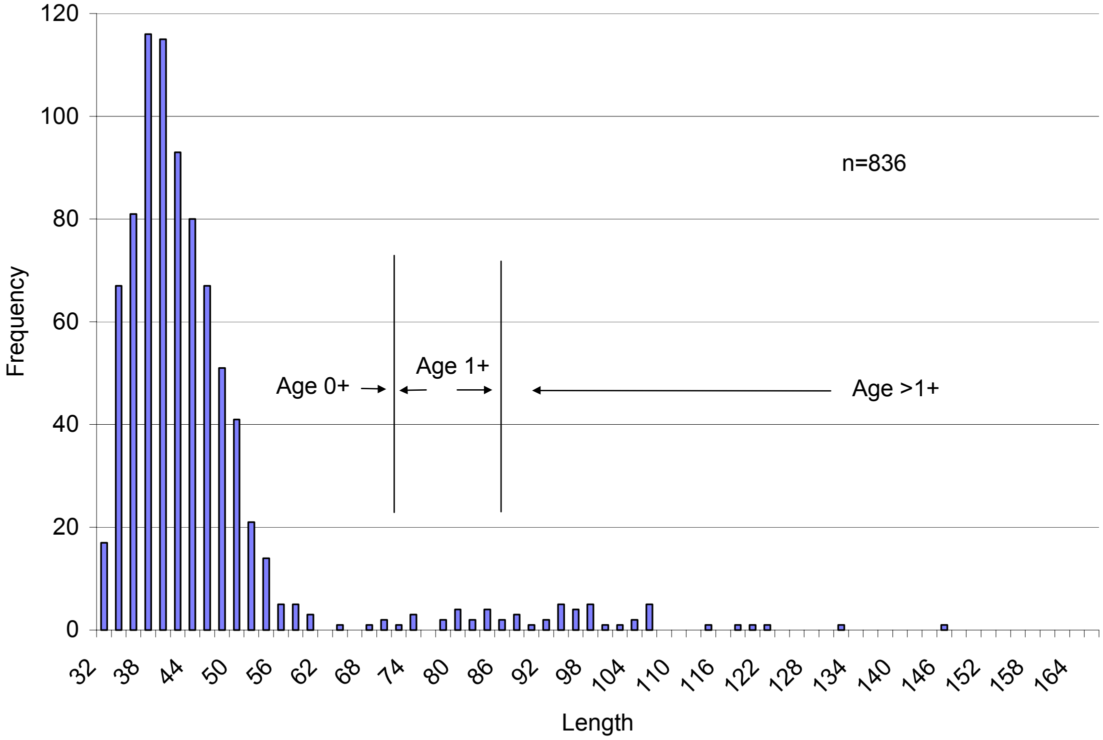

Figure 6. Frequency distribution of Kispiox river steelhead juvenile grouped by 2 mm increments with approximate age class divisions.

Table 7. Mean fry and parr fork lengths for Kispiox mainstem and tributary sites. (n= number of sites; STD = standard deviation).

LOCATION	Forklength (mm) Fry	Parr
Kispiox mainstem		
mean	42.1	89.1
n	495	13
STD of mean	5.5	12.9
Kispiox tributaries		
mean	40.6	93.79
n	292	43
STD of mean	5.9	16.4
Date Creek		
mean	35	83
n	23	2
STD of mean	3.60	14.1
McCully Creek		
mean	38	96.7
n	73	16
STD of mean	5	21.3
Cullon Creek		
mean	43.3	88.1
n	109	10
STD of mean	5.68	13.1
Ironside Creek		
mean	42.1	0
n	53	0
STD of mean	4.65	0
Clifford Creek		
mean	0	97.6
n	0	14
STD of mean	0	11.6
Sweetin river		
mean	38.4	0
n	4	0
STD of mean	3.5	0
Nangeese River		
mean	40.2	82
n	22	1
STD of mean	5.9	0

3.2 Analysis of Historical Fry Index Data

Twelve years of stock monitoring data are available that used fry index sampling (Table 8; Appendix 6 table 4). A total of 73, mainstem index sampling sites are available for analysis. The number of sites used each year has ranged from 4 to 12. Surveys before 1986 were not are weighted to the availability of suitable fry habitat. As a result a disproportionate level of sampling was directed and tributaries compared to the mainstem (4-5 sites per year), which is near 100 km in length.

Table 8. Average steelhead fry densities in the mainstem Kispiox River 1980-1999.

Year	Mean fry/100 m^2	Sample Sites	Reference
1980	9	4	Stuart, 1981
1981	58	4	Tredger, 1982
1982	19	5	Tredger, 1983
1983	71	4	Tredger, 1985
1984	49	5	Tredger, 1984
1985	123	6	Tredger, 1986
1986	112	5	Tredger, 1987
1987	184	4	Tredger, 1988
1988	68	11	MWLAP, Data Files
1990	99	12	MWLAP, Data Files
1991	116	10	MWLAP, Data Files
1999	67.6	8	MWLAP This Report

* MWLAP, Data files were provided by Ron Ptolemy, (MWLAP, Victoria, BC).

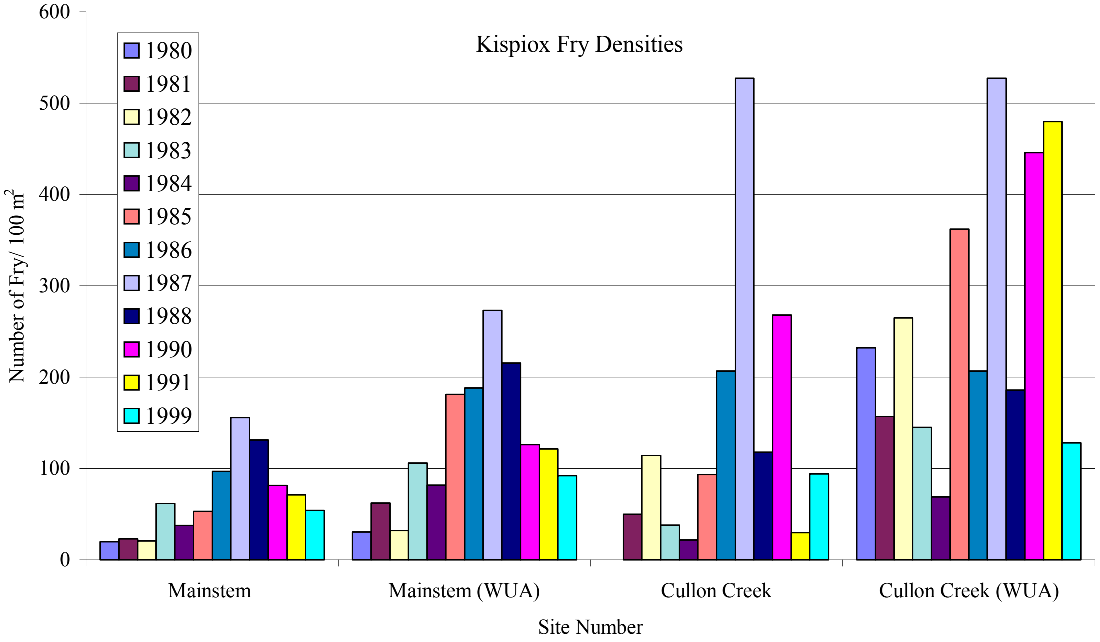

Figure 7. Geometric mean fry and densities (#/100m^2) for the Kispiox River mainstem and Cullon Creek. Estimates are from the period, 1980-1988, 1990-1991 and 1999 (see Table 6 for data sources).

Geometric mean fry density at mainstem sites standardized for weighted usable area ranged from a low of 9 in 1980 to a high of 184 in 1987 (Table 6). A regression analysis comparing the abundance estimates from the Tyee test fishery index and WUA standardized fry densities for the Kispiox River was not significant and was poorly correlated (Figure 8, P= 0.0558). The cumulative steelhead index to the completion of test fishing for each year from 1980 to 1991 (excluding 1989- no data were collected) was used for in this analysis.

Various types of error may account the lack of correlation. First, for the period 1979-1980, the last date of operation for the test fishery often ended before August 31 and was not consistent between years. For example, in 1982 and 1986, the test fishery was completed on August 25. In 1998, the last day of fishery operation was September 30. In years where the test fishery closed early, a portion of the migrating Kispiox River fish may not have been recorded, particularly if the run timing was relatively late. The period from August 1–31 approximately corresponds to the time when Kispiox River steelhead are thought to migrate past the Tyee test fishing area on the lower Skeena River (Baxter, 1997). Other runs of upper Skeena steelhead migrate past the test fishery during the same time period. Thus the cumulative steelhead catch in the Tyee test fishery represents a large aggregate of steelhead stock from a wide range of large river systems within the Skeena basin. Variability in annual escapements of Kispiox steelhead adults may be masked by trends in other populations. Fishing effort, including commercial, recreational, and sustenance fisheries may also influence the observed discrepancies in indexed escapements and fry abundances. Variable sampling effort during the juvenile surveys between years caused by changes in personnel and equipment may also have biased results. Since 1980 sampling has evolved from primarily exploratory or synoptic surveys to systematic repeat surveys, which included detailed habitat measurements.

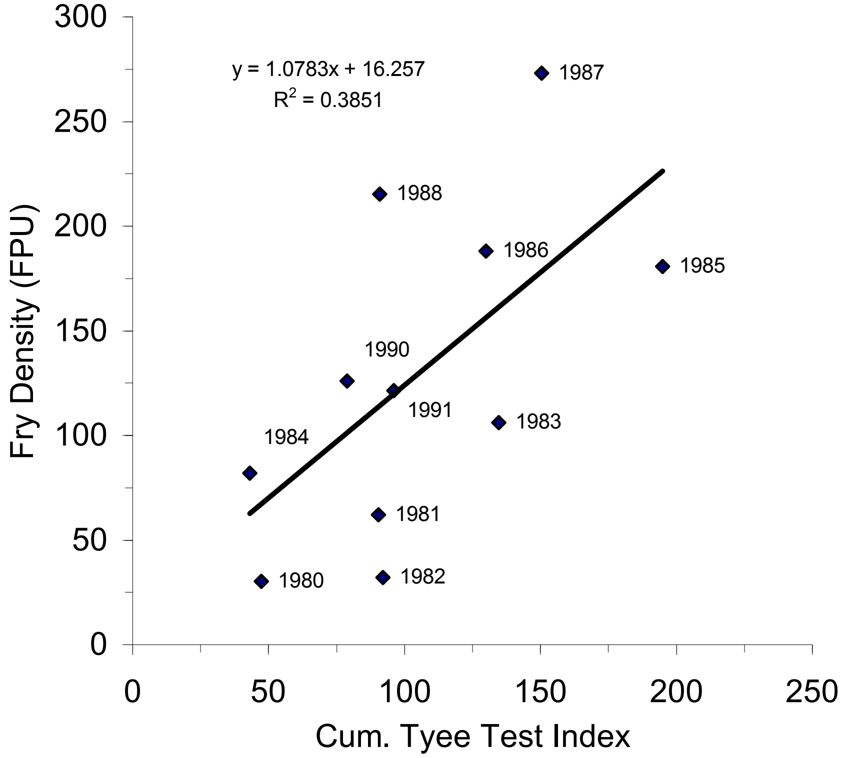

Figure 8. Scatter plot of lower Skeena River "Tyee Test Index" vs. Standardized Steelhead "Fry Abundance" in the Kispiox River (1980-99). Note: The year provided as a data label(x) corresponds to the year of each fry survey. Thus the cumulative Tyee test index year would correspond to x-1.

In contrast a comparison of standardized fry densities and steelhead harvest analysis (SHA) catch per unit effort (CPUE) for the Kispiox River yielded a highly significant (α=0.01)and very well correlated relationship (Figure 8, P= 0.0002). The steelhead harvest analysis data represents an index of the total number of adults on or near the spawning areas, thus factors such as run timing, variable sample program ends dates, mixing of stocks, fishing effort in the lower Skeena and variable juvenile sampling effort are less likely to add bias the observed relationship between indices of escapement and fry production.

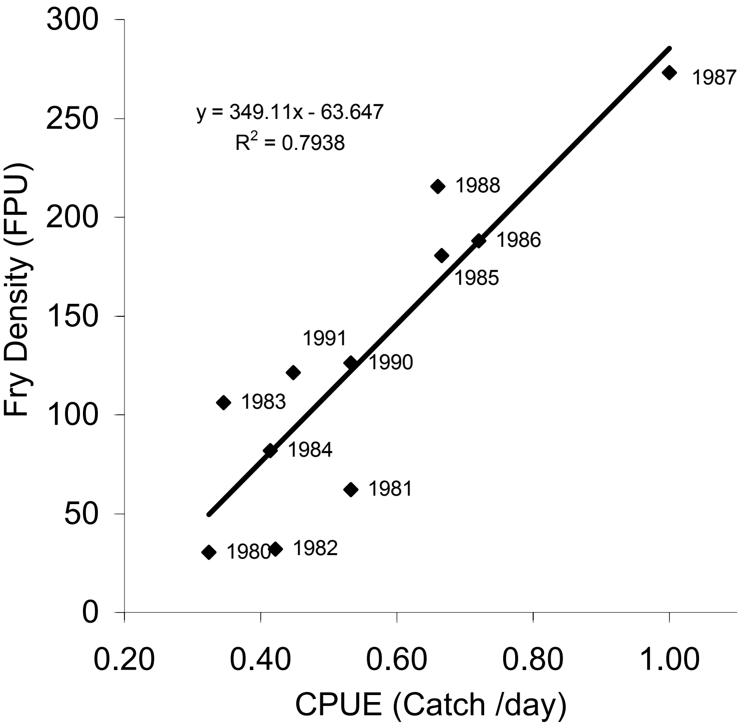

Figure 9. Scatter plot of Steelhead harvest analysis (SHA) catch per unit effort in Year X versus Standardized Steelhead "Fry Abundance" in the Kispiox River 1980-88, 1990-91 and 1999. Note: The year provided as a data label (x) corresponds to the year of each fry survey. Thus the SHA CPUE year would correspond to x-1.

The geometric mean fry densities varied from a low of 30 FPU in 1980 to a high of 273 FPU in 1987 (Figure 9, Appendix 6 Table 3.) Based on the record Tyee steelhead index for 1998 (265), the 1998 brood year should have provided for and exceptional abundance of steelhead fry in 1999. However, only 92 FPU (95%CI 48-175 FPU) (Figure 10) were observed for the Kispiox mainstem in 1999. Very high flows as the result of late snowmelt flood on June 17, 1999 that were 807% of mean annual discharge (MAD= 45.1 m^3/s) likely contributed to the low observed abundance (Figure 11). Gravel (spawning substrate) typically becomes mobile at 400% of MAD (Ron Ptolemy pers. comm.), thus streambed scour and fill likely resulted in the mobilization and mortality of a large proportion of the incubating embryos in 1999. Other large floods have been observed in other years, however, these have occurred before the start of incubation (June 15) or after emergence (July 31) As a final consequence, data for 1999 was considered an outlier and was excluded from both analyses.

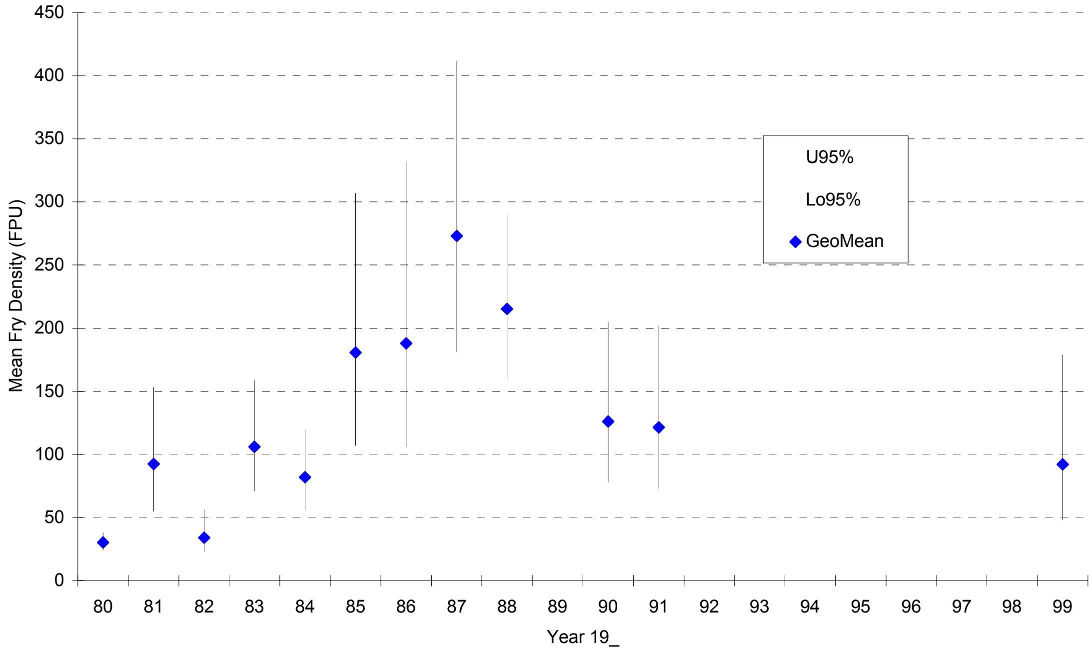

Figure 10. Steelhead fry density (WUA standardized) by Brood Year in the Kispiox River mainstem (2SE about geometric mean values). Sample sizes were large (N >8) in 1988 and beyond.

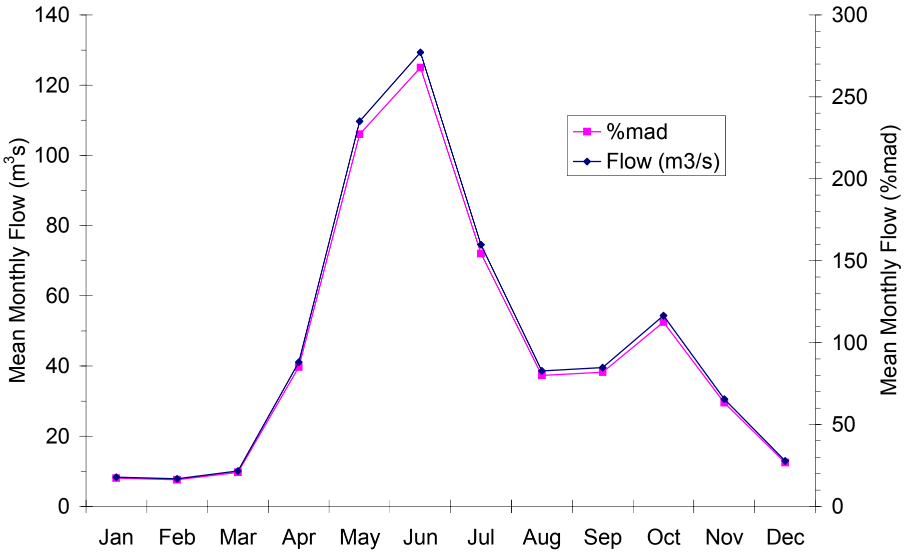

Figure 11. Annual hydrograph for the Kispiox River. Mean annual discharge = 45.1 m3/s (1963-99). Data are from the Water Survey of Canada monitoring station 08EB004.

The density size envelopes for the Kispiox River mainstem and Cullon Creek were calculated to be 210 g/100m^2 and 420 g/100m^2 respectively. These values are in close agreement with the maximum densities observed for both systems. An Allen-plot (log-log plot of density versus mean size) showing 299 density-size pairs for each species-at-age demonstrates this relationship (Figure 12). Data from both Cullon Creek and the Kispiox mainstem are shown. Cullon Creek values fall above the density–size envelope shown for the Kispiox River (Figure 12).

Using the maximum density envelope, the Kispiox River maximum fry (0+) densities for 2 gram fry is near 105 FPU in late September (near the end of the growing season); maximum yearling parr density would be 26 FPU for 8 g fish; maximum 2+ parr density would be 10 FPU for 21 g fish. Some exceptional densities were greater than these values were observed, however they were associated with sites that contained large woody debris, which likely increased the suitability of the habitat. Few age 3+ parr were captured, which is likely the result of sampling bias for shallow habitats that are less suitable for older, larger parr. A high range in observed densities over at least one order of magnitude for some sites (Figure 12) likely represented differences in habitat suitability and fry recruitment. Using a fry target density of 100 fish per unit in suitable habitats for minimum sustained escapement (MSE), there were only two years (1980 and 1982) where fry abundances were less than half of the target density. In most other years, the Kispiox River mainstem appeared to support the potential for maximum smolt production (Figure 10)

Despite years with low mainstem fry abundances, Cullon Creek remained well recruited at > 200 fish/100m^2. In some years fry and parr densities of 800 and 101 fish//100m^2 were observed. A comparison of fry densities between Cullon Creek and the Kispiox River yielded a non-significant result (R^2=0.21). Particularly high densities observed in Cullon Creek may be related to high concentrations of nitrogen and phosphorous. Nitrate/nitrite and total phosphorous concentrations of 20 μg/l and 10 μg/l were recorded in late August of 1988 (M.W.L.A.P data files). For the most part other Kispiox tributaries had very low fry densities in most years. Higher flows in August and September (Figure 9) could mask trends in fry abundances in smaller tributaries where high flows may have a large effect on habitat suitability.

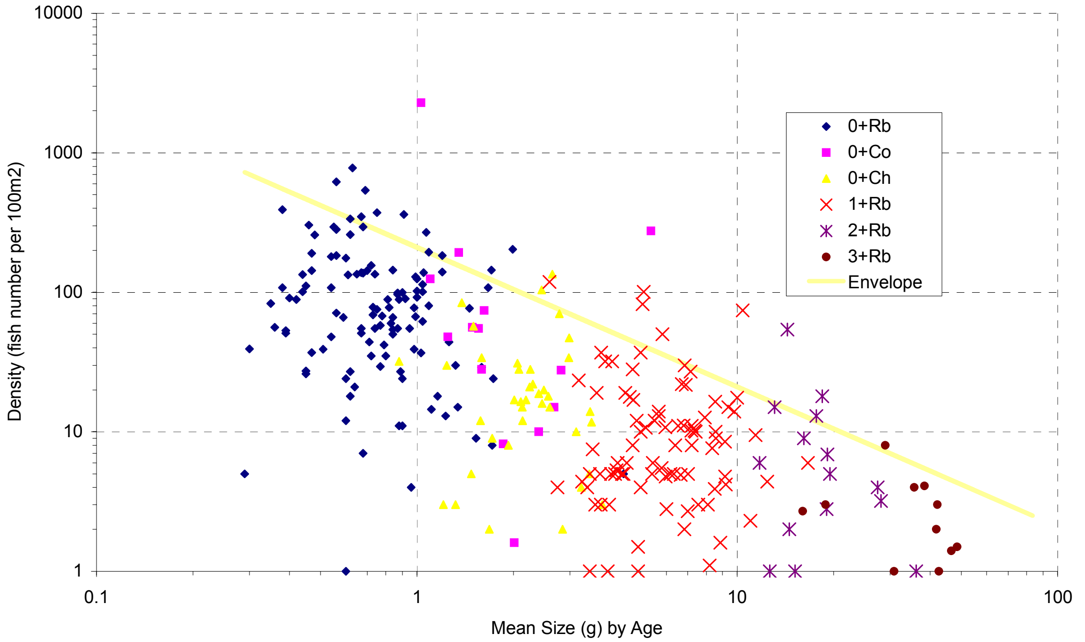

Figure 12. Allen Plot; Scatter plot of local fish density found in shallow habitats of the Kispiox River and selected tributaries (1980-1999). Envelope curve is 210 g/unit. Points above curve are Cullon Creek data (420 g/unit).

3.3 Skeena River

A total of 20 sample sites were located in the Skeena River from Insect Creek downstream of Kitwanga to 14 km upstream of the Kluatantan River (Figure 2). All of the sites were located on the mainstem channel. The Skeena River sites comprised 2192.6 m^2 of habitat (280.5 m of margin). Specific site descriptions and catch data are presented in Appendix 2.

3.3.1 Skeena River Catch Composition

A total of 1193 fish were captured at the 20 Skeena River sites (Table 9). The catch was comprised of 22.5% steelhead fry, 3.2% steelhead parr, 66.1% chinook fry, 4.0% juvenile coho, 1.8% char (Table 10, 11).

Both steelhead and chinook fry were present at 95% of the sites sampled (Table 9 and 10). Steelhead parr were present at 40% of the sites, while coho juveniles were found at 35% of the 20 sites sampled. Detailed catch information by site can be found in Appendix 2.
Steelhead comprised less than half of the catch in the Skeena River (25.7%) compared with the Kispiox River catch (61.6%; Table 3).

Table 9. Catch composition for the Skeena River.

Species	Age Class	Number	Percent	Frequency of Occurance
			(%)	(%)
Steelhead	0+	269	22.5	95.0
Steelhead	1+	26	2.2	30.0
Steelhead	>1+	12	1.0	40.0
Chinook	0+	788	66.1	95.0
Coho	0+	48	4.0	35.0
Char*	all	21	1.8	35.0
LNC	all	0	0.0	0.0
MW	all	10	0.8	20.0
Other	all	19	1.6	35.0
Total		1193	100	
Area (m*m)		2192.6		
Length (M)		280.5		
Number of Sites		20		

* Mix of Dolly Varden char and bull trout.
LNC- Longnose dace, MW- mountain whitefish

Table 10. Site and species specific catch composition for the Kispiox River, 1999.

Site ID	RBT 0+	RBT 1+	RBT >1+	Chinook 0+	Coho 0+	Char all	LNC all	MW all	Other all	All Species
sk1	4	0	0	55	0	2	0	0	0	61
sk2	34	0	0	10	0	0	0	0	0	44
sk3	16	0	1	66	0	0	0	0	0	83
sk4	58	0	0	9	0	0	0	0	0	67
sk5	14	0	0	13	0	2	0	1	0	30
sk6	2	0	0	44	0	0	0	0	0	46
sk7	4	0	0	109	0	0	0	0	0	113
sk8	31	2	5	0	0	0	0	0	0	38
sk9	22	3	2	28	3	6	0	0	0	64
sk10	23	1	1	46	0	0	0	0	0	71
sk11	2	0	0	75	5	3	0	0	1	86
sk12	19	4	1	12	0	2	0	7	0	45
sk13	12	0	9	49	1	5	0	0	12	88
sk14	3	0	0	49	0	1	0	1	0	54
sk15	5	0	0	23	31	0	0	0	0	59
sk16	1	0	0	13	1	0	0	1	1	17
sk17	15	3	0	62	1	0	0	0	2	83
sk18	3	1	2	24	6	0	0	0	1	37
sk19	0	0	0	30	0	0	0	0	1	31
sk20	1	0	1	71	0	0	0	0	1	74
Total	269	14	22	788	48	21	0	10	19	1191

* Mix of Dolly Varden char and bull trout.
LNC- Longnose dace, MW- mountain whitefish

3.3.2 Skeena River Fish Densities

Steelhead Fry and Parr Densities

Steelhead fry densities in the mainstem Skeena River averaged 16.5 fry/100 m^2 for all of the sites combined (Table 11). Fry densities tended to increase with distance upstream (Table 11). Steelhead fry densities increased from 0 fry/100 m^2 at the most downstream site, to between 1.7 and 82.0 fry/100 m^2 at the four uppermost sites (SK1-SK4). Skeena fry densities (16.0 fry/100 m^2) were on average about 25% of the average density on the Kispiox River (57.1 fry/100 m^2; Table 4). With the exception of sites Sk2 and Sk4 and SK10, all of the Skeena mainstem sites had fry densities of less than 25 fry/100m^2. In contrast, all but two of the Kispiox River sites had densities higher than 25 fry/100m^2 (Table 4).

Steelhead parr densities in the mainstem Skeena River averaged 1.8 parr/100 m^2 of habitat sampled (Table 11). Parr densities ranged from 0 to 12.1 parr/100 m^2. Parr were captured at only nine out of twenty sites. Mean parr densities on the Skeena River (1.7 parr /100 m^2) were similar to the Kispiox mainstem sites (1.8 parr /100 m^2) and lower than Kispiox tributary sites (3.7 parr /100 m^2). It should be emphasized that the method of sampling probably leads to an underestimate of steelhead parr densities due to site disturbance while installing stop-nets. Furthermore, sampling is restricted to and is more effective in shallow stream sections that are not utilized by larger parr. Any differences between the mainstem and tributary sites may therefore be, artifacts of the sampling method employed.

Weighted usable area standardized fish densities ranged from 0 to 254.0 fish/ 100 m^2 for fry and 0-26.1 fish/ 100 m^2 for parr (Table 11). Habitat suitability ranged from 32.3 to 88.8 % for fry and 7.6 to 87.9 % for parr. (Appendix 2)

Table 11. Summary of juvenile steelhead density estimates as well as weighted usable area (WUA) corrected density estimates in the Skeena River for 1999. 95% confidence intervals for means are provided in brackets.

Site Name	FRY/100 M^2 1999 # Fry/100 m^2	WUA FRY/100 M^2 1999 # Fry/100 m^2	PARR /100 M^2 1999 # Parr/100 m^2	WUA PARR/100 M^2 1999 # Parr/100 m^2
14 km upstream Kluatantan River	1.7	3.1	0.0	0.0
Kluatantan Confluence	32.8	50.5	0.0	0.0
22 km downstream Kluatantan River	14.6	21.1	0.8	1.4
43.7 km downstream Kluatantan River	82.0	254.0	0.0	0.0
Upstream of Sustut River	17.3	20.3	0.0	0.0
14 km downstream Sustut River	-	-	0.0	0.0
32 km downstream Sustut River	-	-	0.0	0.0
Canyon Creek	23.0	55.3	6.1	8.8
Downstream Canyon Creek	-	-	2.7	5.5
Downstream Sicintine	26.8	60.6	2.3	26.1
Upstream of Kuldo Bridge	2.5	5.3	0.0	0.0
Upstream of Babine Confluence	16.0	31.2	3.9	11.8
Across from Salmon River	18.2	24.4	12.1	20.5
Downstream of Babine #1	1.9	-	0.0	-
Downstream of Babine #2	10.9	-	0.0	-
Kispiox @ 6 Mile Bridge	1.3	1.7	0.0	0.0
Downstream of Bulkley	14.9	19.3	2.8	4.1
Upstream of Kitwanga#1	-	-	4.3	14.3
Downstream of Kitwanga#2	0.0	0.0	0.0	0.0
Insect Creek	0.9	1.9	0.9	2.5
	16.5 (10.8)	39.2 (37.6)	1.8 (1.4)	5.3 (4.0)

3.3.3 Skeena Steelhead Biomass Estimates

3.3.3.1 Steelhead Fry and Parr

Biomass estimates for steelhead fry in the Skeena River mainstem ranged from 0.5 to 48.9 g/100 m^2 (Table 12). The mean biomass estimate for steelhead fry for all sites combined was 12.5 g/100 m^2. Mean fry biomass in the Skeena was approximately one third that for the Kispiox River. Biomass densities at most of the Skeena sites were comparable to lower range of biomass densities on the Kispiox River. Parr biomass ranged from 18.6 to 138.4 g/100 m^2, with a mean density of 59.5 g/100 m^2. This is within the range of estimates derived from the Kispiox River samples (Table 5). Detailed estimates for each site and for all species are presented in Appendix 1.

Table 12. Summary of juvenile steelhead biomass estimates as well as weighted usable area (WUA) corrected biomass estimates in the Skeema River for 1999. 95% confidence intervals for means are provided in brackets.

SITE ID	Site Name	**FRY/100 M^2** 1999 Fry g/100 m^2	**WUA FRY/100 M^2** 1999 Fry g/100 m^2	**PARR /100 M^2** 1999 Parr g/100 m^2	**WUA PARR /100 M^2** 1999 Parr g/100 m^2
sk1	14 km upstream Kluatantan River	0.5	0.8	-	-
sk2	Kluatantan Confluence	19.5	30.0	-	-
sk3	22 km downstream Kluatantan River	6.7	9.7	18.6	33.2
sk4	43.7 km downstream Kluatantan River	48.9	151.3	-	-
sk5	Upstream of Sustut River	11.2	13.1	-	-
sk6	14 km downstream Sustut River	-	-	-	-
sk7	32 km downstream Sustut River	-	-	-	-
sk8	Canyon Creek	21.1	50.7	138.4	199.7
sk9	Downstream Canyon Creek	-	-	72.5	147.4
sk10	Downstream Sicintine	18.4	41.6	25.3	287.7
sk11	Upstream of Kuldo Bridge	1.4	2.9	-	-
sk12	Upstream of Babine Confluence	11.7	22.9	28.1	85.0
sk13	Acrross from Salmon River	18.2	24.4	114.0	192.5
sk14	Downstream of Babine #1	2.0	-	-	-
sk15	Downstream of Babine #2	13.4	-	-	-
sk16	Kipsiox @ 6 Mile Bridge	0.5	0.7	-	-
sk17	Downstream of Bulkley	12.7	16.5	14.2	20.9
sk18	Upstream of Kitwanga#1	-	-	85.5	284.2
sk19	Downstream of Kitwanga#2	-	-	-	-
sk20	Insect Creek	0.7	1.5	39.2	103.9
MEAN (all sites)		12.5 (6.7)	28.1 (24.3)	59.5 (34.7)	150 (75.8)

3.3.4 Skeena River Age and Length Summary

Figure 13 summarizes the length-frequency distribution for 305 steelhead sampled in the Kispiox River sites in 1999. Approximate age class divisions for 1999 are shown based on age-scale analyses from 30 steelhead parr (Appendix 3 Table 2). The parr sampled were age 1+, 2+ and 3+ fish. The mean fork length of steelhead fry for all Skeena River sites was 39.0 mm (95% C.I.; 38.6- 39.4 mm; n=269), while yearling parr averaged 86.7 mm (95% C.I.; 81.5- 91.9 mm; n=26) fork length. Skeena River steelhead fry were slightly smaller than Kispiox River fry (mean= 41.1 mm, 95% C.I.;40.7-41.5 mm; n=779).

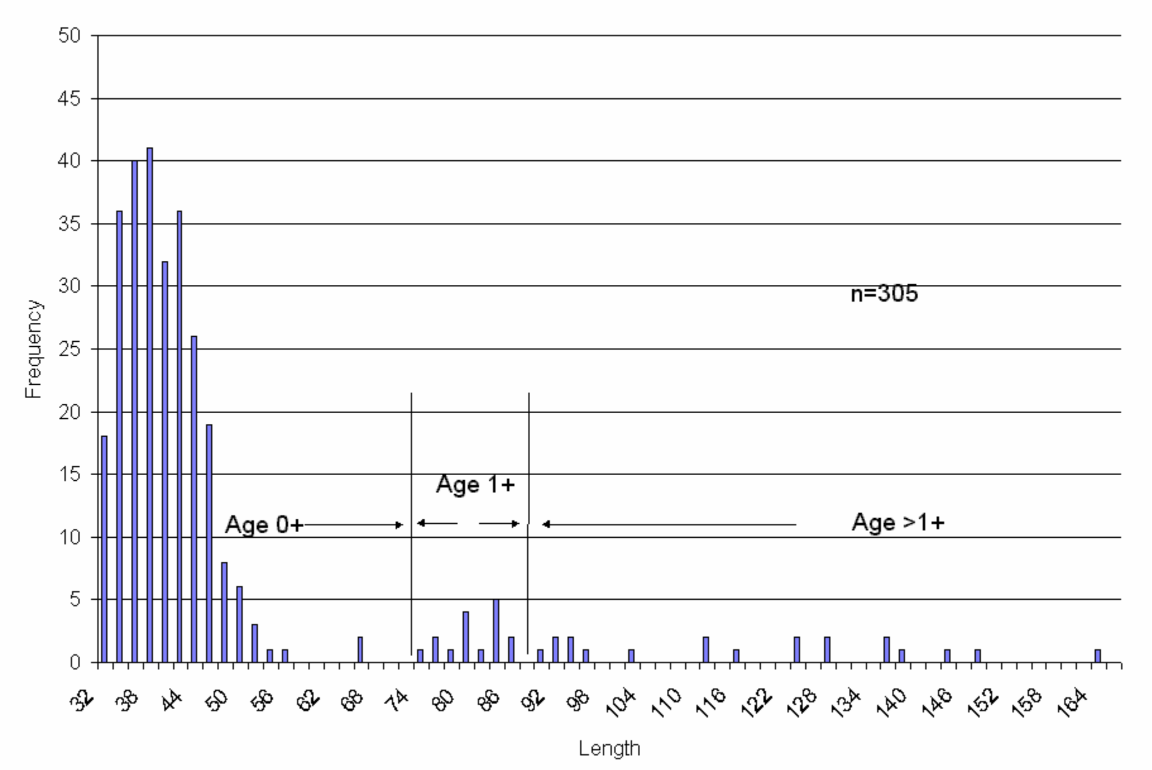

Figure 13. Frequency distribution of Skeena River steelhead juveniles grouped by 2 mm increments with approximate age class divisions.

3.3.5 Skeena River Summary

Skeena River fry and parr were similar in size and age to Kispiox River steelhead sampled in the same year. Compared with the Kispiox River, fry densities were low at most Skeena River sites. Assuming the same density-thinning envelope as was observed for the mainstem Kispiox River (105 FPU or 210 g/100 m^2), all of the Skeena River sites for 1999 with the exception of site SK4 were less than 50% utilized. Assuming that these sites are typically well recruited, high water in Skeena River tributaries in 1999 may have reduced potential steelhead fry recruitment on a basin wide scale. However, further index sampling for fry abundances in the mainstem Skeena should be undertaken to establish the nature of the relationship between Skeena mainstem fry abundances and upstream spawning, before any conclusions are made.

4.0 Conclusions

4.1 Kispiox River

Juvenile sampling was conducted at 18 sites in the Kispiox River including 8 mainstem and 10 tributary locations. Most of these sites had been previously sampled during the period 1980 to 1987, however only four sites were sampled continuously during that period.

- The mainstem Kispiox River catch was dominated by steelhead fry (Table 3). Other species, including char, chinook and coho comprised 45.8 percent of the total catch. Forty five char fry were caught at the Kispiox-Sweetin River confluence, likely indicating proximity to an important char spawning area.

- Steelhead dominated the Kispiox River tributary catch and were present at all but one site (K15; downstream Clifford Creek culvert). Steelhead fry comprised a greater proportion of the tributary catch compared to the mainstem. Chinook juveniles comprised 18.2% of the overall Kispiox tributary catch.

- Steelhead fry densities averaged 67.6 fry/100 m^2 for all of the Kispiox River mainstem sites combined (Table 4). This is higher than the mean for the tributary sites 49.1 fry/100 m^2.

- Steelhead parr (comprised mainly of age 1+ and age 2+ fish) averaged 1.8 parr/100 m^2 for all sites combined in the mainstem Kispiox River. This is within the range of results reported for other years.

- Steelhead parr densities in Kispiox River tributaries averaged 5.9 parr/100 m^2.

- Despite the exceptionally high Tyee Test Fishery steelhead index in 1998, high fry densities were not observed as might be have been expected in 1999. Unusual hydrological conditions (late snow-pack ablation combined with a prolonged high river discharge of 807% mean annual discharge during the incubation period likely contributed to the observed low fry densities.

- There was not a statistically significant correlation between the Tyee test fishery index on the Skeena River and historical fry densities corrected for usable habitat area on the Kispiox River (Figure 8). Variation in the end-date of the test fishery during 1979-1987, or variation in river conditions between the time of egg deposition and sampling in the following year (which may be large source of variability in fry production) may contribute significantly to the un-explained variation in the regression model. In contrast, there was a highly significant and well-correlated relationship between the

Steelhead harvest analysis and fry recruitment indices corrected for usable habitat area (Figure 9).

- The density size envelopes for the Kispiox River mainstem and Cullon Creek were calculated to be 210 g/100m^2 and 420 g/100m^2 respectively. These values are in close agreement with the maximum densities observed for both systems.

- Using the maximum density envelope, the Kispiox River maximum fry (0+) densities for 2 gram fry is near 105 FPU in late September (near the end of the growing season); maximum yearling parr density would be 26 FPU for 8 g fish; maximum 2+ parr density would be 10 FPU for 21 g fish.

- Even years with low mainstem fry abundances, Cullon Creek remained well recruited at > 200 fish/100m^2. There was no correlation in fry abundance between Cullon Creek and Mainstem Kispiox River sites.

4.2 Skeena River

Juvenile sampling was conducted at 20 sites along the mainstem Skeena River in 1999.

- Similar to the Kispiox River, the Skeena River catch was dominated by chinook and steelhead fry (Table 9). The chinook fry catch was, however, three times that of the steelhead fry catch. Skeena steelhead were caught in similar proportions to the mainstem Kispiox River sites.

- Steelhead fry densities in the mainstem Skeena River averaged 16.5 fry/100 m^2 for all of the sites combined (Table 12). Fry densities increased with distance upstream starting from the most downstream site. (Table 11).

- Steelhead parr densities in the mainstem Skeena River averaged 1.8 parr/100 m^2 of habitat. Parr were captured at only nine of twenty Skeena River sites. Parr densities were similar to those observed at Kispiox mainstem sites.

- Fry from the Skeena River steelhead fry were slightly smaller than Kispiox River fry (mean= 41.1 mm, 95% C.I.;40.7-41.5 mm; n=779) however the difference was small and probably not biologically significant.

- At most sites, with the exception of Sk2 and Sk4, all Skeena fry densities were less than 25% of those observed on the Kispiox River. Based on the density-thinning envelope that was observed for the mainstem Kispiox River (105 FPU or 210 g/100 m^2), all of the Skeena River sites for 1999 with the exception of site SK4 were less than 50% utilized.

6.0 Literature Cited

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7.0 Appendices

7.1 Appendix 1. 1999 Kispiox River Site, Habitat and Fish Data

Appendix 1. 1999 Kispiox River Site, Habitat and Fish Data

KISPIOX WATERSHED ELECTROFISHING SITE 1999

STREAM NAME:	Kispiox River	SITE:	K1	DATE:	99/09/25
WATERSHED CODE:	470-00000			PHOTO:	R2 14/15
SITE LOCATION:	DOWNSTREAM KISPIOX VILLAGE				
UTM:	09.582499.6134035	ACCESS:	VEHICLE		
GPS LOCATION:	582499 6134035	EFFORT:	PASS 1:	273	secs
MAINSTEM or SIDECHANNEL:	sc		PASS 2:	211	secs

SLOPE (%): 1 TEMP (C): 9 TIME: 1100 COND: 89 pH: n/a

TURBIDITY: CLEAR cm

SAMPLING COMMENTS: Fish captured in first 3 meters from shore. Evan distribution of fish. Faster sections held fish which were associated with cobble and boulders. Catch dominated by chinook, rainbow and steelhead.

POPULATION ESTIMATES:

SPECIES	AGE	FL RANGE	FL MEAN	PASS 1	PASS 2	U1+U2	NUMBER	S.E.	N/M*M	N/100M	MEAN WT	BIOMASS g/m*m
Rbt	0+	41-55	46.6	12	2	14	14.4	0.9	0.145	0.960	-	-
Rbt	1+	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Rbt	>1+	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Chinook	all	58-78	66.4	9	2	11	11.6	1.2	0.117	0.771	-	-
Coho	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Char	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
LNC	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
MW	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Other	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
TOTAL							26.0		0.262	173.1		0.000

SITE LOCATION	WETTED WIDTH (m)		SITE COVER (%)			SITE WATER TYPE (%)	MEAN DEPTH (cm)
0	7.2	LOD	0		POOL		n/a
3	7.7	BOULDER	100		RIFFLE	90	0
6	5.0	IN VEG	0		RUN		
9	6.5	OVER VEC	0		OTHER	10	
12		CUTBANK	0				(cm)
15		DEEP POO	0		d90:		22
18					dMax:		30
20		TOTAL	100	10	COMPACTION:		L
24							
	6.6						

AREA (M*M):	99.0	MARGIN (M):	15.0	WETTED WIDTH (m):	78.4
				CHANNEL WIDTH (m	79

HABITAT COMMENTS: Stream depth/velocity/bed material transect data was collected at this site.

KISPIOX WATERSHED ELECTROFISHING SITE 1999

STREAM NAME: KISPIOX RIVER SITE: K2 DATE: 99/09/17
WATERSHED CODE: 470-00000 PHOTO: RT 20/21
SITE LOCATION: MAINSTEM @ POTATO PATCH
UTM: 09.583263.6139019 ACCESS: VEHICLE
GPS LOCATION: 583263 6139019 EFFORT: PASS 1: 679 secs
MAINSTEM or SIDECHANNEL: m PASS 2: 347 secs

SLOPE (%): 1 TEMP (C): 11 TIME: COND: 100.3 pH: 7.87
TURBIDITY: CLEAR cm
SAMPLING COMMENTS: No comments

POPULATION ESTIMATES:

SPECIES	AGE	FL RANGE	FL MEAN	PASS 1	2	U1+U2	NUMBER	S.E.	N/M*M	N/100M	MEAN WT	BIOMASS g/m*m
Rbt	0+	32-58	42.8	25	4	29	29.8	1.2	0.367	1.971	1.03	0.380
Rbt	1+	84-85	84.5	3	1	4	-	-	-	-	6.65	-
Rbt	>1+	105-118	111.5	2	0	2	2.0	0.0	0.025	0.132	16.90	0.417
Chinook	all	53-81	63.5	35	3	38	38.3	0.6	0.472	2.535	2.99	1.411
Coho	all	48-62	55.2	5	1	6	6.3	0.8	0.077	0.414	2.38	0.184
Char	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
LNC	all	41-50	47.0	6	2	8	9.0	2.1	0.111	0.596	1.40	0.155
MW	all	69	56.1	8	0	8	8.0	0.0	0.099	0.530	1.55	0.153
Other	all	-	-	8	0	8	8.0	0.0	0.099	0.530	-	-
TOTAL							101.3		1.250	670.8		2.700

SITE LOCATION	WETTED WIDTH (m)			SITE COVER (%)		SITE WATER TYPE (%)	MEAN DEPTH (cm)
0	5.3	LOD	0		POOL	10	45
3	6.5	BOULDER	85		RIFFLE	10	30
6	4.3	IN VEG	0		RUN	10	
9		OVER VEC	5		OTHER		
12		CUTBANK	0				(cm)
15		DEEP POO	10		d90:		30
18					dMax:		45
20		TOTAL	100	n/a	COMPACTION:		L
24							
	5.4			WETTED WIDTH (m):	28		
AREA (M*M):	81.0	MARGIN (M):	15.1	CHANNEL WIDTH (m	80		

HABITAT COMMENTS: Stream depth/velocity/bed material transect data was collected at this site.

KISPIOX WATERSHED ELECTROFISHING SITE 1999

STREAM NAME:	KISPIOX RIVER	SITE:	K3	DATE:	99/09/25		
WATERSHED CODE:	470-00000			PHOTO:	R2-16/17		
SITE LOCATION:	MAINSTEM AT RODEO GROUNDS						
UTM:	09.581165.6144143	ACCESS:	VEHICLE				
GPS LOCATION:	581165 6144143	EFFORT:	PASS 1:	716	secs		
MAINSTEM or SIDECHANNEL:	M		PASS 2:	450	secs		
SLOPE (%):	1	TEMP (C):	9	TIME:	14:30	COND:	-
pH:	-	TURBIDITY:	CLEAR cm				

SAMPLING COMMENTS: Fry found along 3-m strip along shore. Chinook and steelhead parr along outer edge of site. Diversity of species were found. Excellent site for fry, steelhead dominated, high densitites of steelhead fry.

POPULATION ESTIMATES:

SPECIES	AGE	FL RANGE	FL MEAN	PASS 1	2	U1+U2	NUMBER	S.E.	N/M*M	N/100M	MEAN WT	BIOMASS g/m*m
Rbt	0+	33-63	44.8	98	23	121	128.1	4.4	1.252	7.761	-	-
Rbt	1+	80	80.0	1	0	1	1.0	0.0	0.010	0.061	-	-
Rbt	>1+	90	90.0	1	0	1	1.0	0.0	0.010	0.061	-	-
Chinook	all	53-66	59.4	19	3	22	22.6	1.0	0.221	1.367	-	-
Coho	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Char	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
LNC	all	35-49	43.6	8	5	13	21.3	16.0	0.209	1.293	-	-
MW	all	49	49.0	1	0	1	1.0	0.0	0.010	0.061	-	-
Other	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
TOTAL							174.9		1.710	1060.3		0.000

SITE LOCATION	WETTED WIDTH (m)			SITE COVER (%)		SITE WATER TYPE (%)	MEAN DEPTH (cm)
0	5.5	LOD			POOL		
3	6.9	BOULDER	100		RIFFLE	90	28
6		IN VEG			RUN		
9		OVER VEG			OTHER	10	
12		CUTBANK					(cm)
15		DEEP POOL			d90:		15
18					dMax:		22
20		TOTAL	100	10	COMPACTION:		
24							
	6.2			WETTED WIDTH (m):	59.5		
AREA (M*M):	102.3	MARGIN (M):	16.5	CHANNEL WIDTH (m	66		

HABITAT COMMENTS: Stream depth/velocity/bed material transect data was collected at this site.

KISPIOX WATERSHED ELECTROFISHING SITE 1999

STREAM NAME: KISPIOX RIVER SITE: K5 DATE: 99/09/16
WATERSHED CODE: 470-00000 PHOTO: R1-12,13
SITE LOCATION: UPPER KISPIOX FOREST REC. SITE
UTM: 09.571964.6154988 ACCESS: VEHICLE
GPS LOCATION: 571964 6154988 EFFORT: PASS 1: 635 secs
MAINSTEM or SIDECHANNEL: M PASS 2: 694 secs

SLOPE (%): 1 TEMP (C): 11 TIME: 10:00 COND: 67.1 pH: 7.5
TURBIDITY: CLEAR cm

SAMPLING COMMENTS: No Comments

POPULATION ESTIMATES:

SPECIES	AGE	FL RANGE	FL MEAN	PASS 1	2	U1+U2	NUMBER	S.E.	N/M*M	N/100M	MEAN WT	BIOMASS g/m*m
Rbt	0+	32-56	42.4	19	5	24	25.8	2.4	0.500	1.602	-	-
Rbt	1+	87	87.0	1	0	1	1.0	0.0	0.019	0.062	-	-
Rbt	>1+	96	96.0	1	0	1	1.0	0.0	0.019	0.062	-	-
Chinook	all	55-62	59.8	3	3	6	-	-	-	-	-	-
Coho	all	45-53	47.1	3	4	7	-	-	-	-	-	-
Char	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
LNC	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
MW	all	62	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Other	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
TOTAL							27.8		0.539	172.6		0.000

SITE LOCATION	WETTED WIDTH (m)			SITE COVER (%)		SITE WATER TYPE (%)	MEAN DEPTH (cm)
0	2.8	LOD	0		POOL	0	
3	4.0	BOULDER	70		RIFFLE	0	
6	3.4	IN VEG	0		RUN	99	
9	2.6	OVER VEC	30		OTHER	0	
12		CUTBANK	0				(cm)
15		DEEP POO	0		d90:		40
18					dMax:		60
20		TOTAL	100	40	COMPACTION:		L
24							
	3.2			WETTED WIDTH (m):	76		
AREA (M*M):	51.6	MARGIN (M):	16.1	CHANNEL WIDTH (m	74.4		

HABITAT COMMENTS: Stream depth/velocity/bed material transect data was collected at this site.
No other comments

KISPIOX WATERSHED ELECTROFISHING SITE 1999

STREAM NAME: KISPIOX RIVER SITE: K6 DATE: 99/09/16
WATERSHED CODE: 470-00000 PHOTO: 15,16
SITE LOCATION: UPSTREAM MITTEN BRIDGE
UTM: 09.557820.6161078 ACCESS: VEHICLE
GPS LOCATION: 557820 6161078 EFFORT: PASS 1: 411 secs
MAINSTEM or SIDECHANNEL: M PASS 2: 454 secs

SLOPE (%): 0.5 TEMP (C): 11 TIME: 15:30 COND: 53 pH: 7.5
TURBIDITY: CLEAR cm
SAMPLING COMMENTS:

POPULATION ESTIMATES:

SPECIES	AGE	FL RANGE	FL MEAN	PASS 1	2	U1+U2	NUMBER	S.E.	N/M*M	N/100M	MEAN WT	BIOMASS g/m*m
Rbt	0+	34-50	41.0	10	5	15	20.0	7.7	0.294	3.922	0.77	0.227
Rbt	1+	74	74.0	1	0	1	1.0	0.0	0.015	0.196	4.90	0.072
Rbt	>1+	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Chinook	all	52-67	60.1	8	3	11	12.8	3.2	0.188	2.510	2.40	0.451
Coho	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Char	all	49	-	0	1	1	-	-	-	-	-	-
LNC	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
MW	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Other	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
TOTAL							33.8		0.496	662.7		0.750

SITE LOCATION	WETTED WIDTH (m)			SITE COVER (%)		SITE WATER TYPE (%)	MEAN DEPTH (cm)
0	12.6	LOD	0		POOL		
3	14.6	BOULDER	40		RIFFLE	1	
6	12.6	IN VEG	0		RUN	99	31
9	13.6	OVER VEC	60		OTHER		
12		CUTBANK	0				(cm)
15		DEEP POO	0		d90:		15
18					dMax:		20
20		TOTAL	100	20	COMPACTION:		L
24							
	13.4			WETTED WIDTH (m):	48.2		
AREA (M*M):	68.1	MARGIN (M):	5.1	CHANNEL WIDTH (m	50.8		

HABITAT COMMENTS: Stream depth/velocity/bed material transect data was collected at this site.

KISPIOX WATERSHED ELECTROFISHING SITE 1999

STREAM NAME: KISPIOX RIVER SITE: K7 DATE: 99/09/08
WATERSHED CODE: 470-00000 PHOTO: R1-3,4
SITE LOCATION: KISPIOX RIVER/ SWEETIN CONFLUENCE
UTM: 9.545746.6169687 ACCESS: VEHICLE
GPS LOCATION: 545746 6169687 EFFORT: PASS 1: 457 secs
MAINSTEM or SIDECHANNEL: m PASS 2: 274 secs
PASS 3: 171
SLOPE (%): n/a TEMP (C): 9 TIME: 14:00 COND: 58 pH: 7.36
TURBIDITY: CLEAR cm
SAMPLING COMMENTS: No comments.

POPULATION ESTIMATES:

SPECIES	AGE	FL RANGE	FL MEAN	PASS 1	2	U1+U2	NUMBER	S.E.	N/M*M	N/100M	MEAN WT	BIOMASS g/m*m
Rbt	0+	34-57	38.4	50	15	65	71.4	4.9	0.675	3.519	0.78	0.528
Rbt	1+	72-77	74.5	2	0	2	2.0	0.0	0.019	0.099	4.60	0.087
Rbt	>1+	93	93.0	1	0	1	1.0	0.0	0.009	0.049	-	-
Chinook	all	38-62	53.2	18	0	18	18.0	0.0	0.170	0.887	2.01	0.342
Coho	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Char	all	36-56	42.8	21	15	36	73.5	52.5	0.695	3.621	0.98	0.678
LNC	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
MW	all	220	-	0	1	1	-	-	-	-	-	-
Other	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
TOTAL							165.9		1.569	817.4		1.635

SITE LOCATION	WETTED WIDTH (m)			SITE COVER (%)		SITE WATER TYPE (%)	MEAN DEPTH (cm)
0	7.1	LOD	0		POOL		
3	6.3	BOULDER	100		RIFFLE	99	
6	6.0	IN VEG	0		RUN	1	
9	5.0	OVER VEC	0		OTHER		
12	4.2	CUTBANK	0				(cm)
15	2.7	DEEP POO	0		d90:		20
18					dMax:		24
20		TOTAL	100	20	COMPACTION:		L
24							
	5.2			WETTED WIDTH (m):	58.3		
AREA (M*M):	105.8	MARGIN (M):	20.3	CHANNEL WIDTH (m	73.8		

HABITAT COMMENTS: Stream depth/velocity/bed material transect data was collected at this site.

KISPIOX WATERSHED ELECTROFISHING SITE 1999

STREAM NAME: KISPIOX RIVER SITE: K8 DATE: 99/09/17
WATERSHED CODE: 470-038200 PHOTO: RT-18,19
SITE LOCATION: DATE CREEK(UPSTREAM BRIDGE)
UTM: 09.581385.6139582 ACCESS: VEHICLE
GPS LOCATION: 581385 6139582 EFFORT: PASS 1: 1448 secs
MAINSTEM or SIDECHANNEL: M PASS 2: 1032 secs

SLOPE (%): 1.5 TEMP (C): 7 TIME: 10:00 COND: 180 pH: 7.95
TURBIDITY: CLEAR cm
SAMPLING COMMENTS: No Comments

POPULATION ESTIMATES:

SPECIES	AGE	FL RANGE	FL MEAN	PASS 1	2	U1+U2	NUMBER	S.E.	N/M*M	N/100M	MEAN WT	BIOMASS g/m*m
Rbt	0+	28-42	35.0	21	2	23	23.2	0.6	0.343	1.407	0.54	0.187
Rbt	1+	73	73.0	1	0	1	1.0	0.0	0.015	0.061	5.10	0.075
Rbt	>1+	93	93.0	1	0	1	1.0	0.0	0.015	0.061	8.50	0.126
Chinook	0+	58-70	61.6	5	0	5	5.0	0.0	0.074	0.303	-	-
Coho	0+	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Char	>0+	42-80	52.6	9	2	11	11.6	1.2	0.171	0.701	-	-
LNC	0+	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
MW	>0+	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Other	>0+	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
TOTAL							41.8		0.618	253.2		0.388

SITE LOCATION	WETTED WIDTH (m)			SITE COVER (%)		SITE WATER TYPE (%)	MEAN DEPTH (cm)
0	3.2	LOD	0		POOL		
3	5.2	BOULDER	95		RIFFLE	100	
6	3.9	IN VEG	0		RUN		
9		OVER VEC	5		OTHER		
12		CUTBANK	0				(cm)
15		DEEP POO	0		d90:		40
18					dMax:		50
20		TOTAL	100	30	COMPACTION:		L
24							
	4.1			WETTED WIDTH (m):	12		
AREA (M*M):	67.7	MARGIN (M):	16.5	CHANNEL WIDTH (m	15		

HABITAT COMMENTS: Stream depth/velocity/bed material transect data was collected at this site.

KISPIOX WATERSHED ELECTROFISHING SITE 1999

STREAM NAME: KISPIOX RIVER SITE: K9 DATE: 99/09/13
WATERSHED CODE: 470-155700 PHOTO: R2 15/16
SITE LOCATION: McCULLY CREEK UPSTREAM OF BRIDGE
UTM: 09.576706.6149508 ACCESS: VEHICLE
GPS LOCATION: 576706 6149508 EFFORT: PASS 1: 377 secs
MAINSTEM or SIDECHANNEL: M PASS 2: 271 secs

SLOPE (%): 2 TEMP (C): 9 TIME: 15:15 COND: n/a pH: 7.15
TURBIDITY: CLEAR cm
SAMPLING COMMENTS: No comments.

POPULATION ESTIMATES:

SPECIES	AGE	FL RANGE	FL MEAN	PASS 1	2	U1+U2	NUMBER	S.E.	N/M*M	N/100M	MEAN WT	BIOMASS g/m*m
Rbt	0+	33-52	40.8	12	3	15	16.0	1.7	0.287	1.280	0.82	0.236
Rbt	1+	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Rbt	>1+	104-145	124.5	2	0	2	2.0	0.0	0.036	0.160	29.00	1.039
Chinook	all	44-75	60.7	12	2	14	14.4	0.9	0.258	1.152	2.69	0.694
Coho	all	44-45	44.5	1	1	2			-	-	1.00	-
Char	all	44-95	65.8	3	2	5	9.0	13.4	0.161	0.720	4.04	0.651
LNC	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
MW	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Other	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
TOTAL							41.4		0.741	331.2		2.620

SITE LOCATION	WETTED WIDTH (m)	SITE COVER (%)			SITE WATER TYPE (%)		MEAN DEPTH (cm)
0	4.4	LOD			POOL	5	40
3	3.2	BOULDER	50		RIFFLE	15	18
6	5.8	IN VEG			RUN	80	
9		OVER VEC	16.6		OTHER		
12		CUTBANK	16.6				(cm)
15		DEEP POO	16.6		d90:		18
18					dMax:		62
20		TOTAL	100	30	COMPACTION:		L
24							

4.5 WETTED WIDTH (m): 17.5
AREA (M*M): 55.8 MARGIN (M): 12.5 CHANNEL WIDTH (m 24.4

HABITAT COMMENTS: Stream depth/velocity/bed material transect data was collected at this site.

KISPIOX WATERSHED ELECTROFISHING SITE 1999

STREAM NAME:	KISPIOX RIVER	SITE:	K10	DATE:	99/09/13		
WATERSHED CODE:	470-155700			PHOTO:	17/18		
SITE LOCATION:	UPPER McCULLY #2						
UTM:	09.572660.6149039	ACCESS:	VEHICLE				
GPS LOCATION:	572660 6149039	EFFORT:	PASS 1:	1048	secs		
MAINSTEM or SIDECHANNEL:	S		PASS 2:	452	secs		
SLOPE (%): 1	TEMP (C): 8	TIME:	11:30	COND:	0.02	pH:	7.15
		TURBIDITY:	CLEAR cm				

SAMPLING COMMENTS: No Comments.

POPULATION ESTIMATES:

SPECIES	AGE	FL RANGE	FL MEAN	PASS 1	PASS 2	U1+U2	NUMBER	S.E.	N/M*M	N/100M	MEAN WT	BIOMASS g/m*m
Rbt	0+	31-50	37.0	46	13	59	64.1	4.2	0.283	1.582	0.73	0.207
Rbt	1+	70-87	80.3	9	1	10	10.1	0.4	0.045	0.250	6.86	0.306
Rbt	>1+	97-132	111.8	1	4	5	-	-	-	-	22.40	-
Chinook	all	42-64	55.1	7	8	15	-	-	-	-	2.12	-
Coho	all	41-60	47.8	13	7	20	28.2	11.3	0.124	0.695	1.40	0.174
Char	all	32-96	50.0	35	12	47	53.3	5.4	0.235	1.314	2.29	0.537
LNC	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
MW	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Other	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
TOTAL							155.7		0.687	384.0		1.224

SITE LOCATION	WETTED WIDTH (m)			SITE COVER (%)		SITE WATER TYPE (%)	MEAN DEPTH (cm)
0	5.3	LOD	30		POOL	10	45
3	10.2	BOULDER	15		RIFFLE	10	9
6	3.5	IN VEG			RUN	80	
9	3.4	OVER VEG			OTHER		
12		CUTBANK					(cm)
15		DEEP POO	55		d90:		24
18					dMax:		36
20		TOTAL	100	17	COMPACTION:		L
24							
	5.6			WETTED WIDTH (m):	17.06		
AREA (M*M):	226.7	MARGIN (M):	40.5	CHANNEL WIDTH (m	30.02		

HABITAT COMMENTS: Stream depth/velocity/bed material transect data was collected at this site.

KISPIOX WATERSHED ELECTROFISHING SITE 1999

STREAM NAME: CULLON CREEK SITE: K11 DATE: 99/09/15
WATERSHED CODE: 470-245700 PHOTO: R1 5/6/7
SITE LOCATION: U/S BRIDGE ON LOWER CULLON CREEK
UTM: 09.569316.6158445 ACCESS: VEHICLE
GPS LOCATION: 569316 6158445 EFFORT: PASS 1: 348 secs
MAINSTEM or SIDECHANNEL: PASS 2: 231 secs

SLOPE (%): 1 TEMP (C): 10 TIME: 10:45 COND: 53 pH: 6.8
TURBIDITY: CLEAR cm
SAMPLING COMMENTS: No comments.

POPULATION ESTIMATES:

SPECIES	AGE	FL RANGE	FL MEAN	PASS 1	2	U1+U2	NUMBER	S.E.	N/M*M	N/100M	MEAN WT	BIOMASS g/m*m
Rbt	0+	35-60	43.2	31	14	45	56.5	10.1	0.775	3.899	0.98	0.755
Rbt	1+	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Rbt	>1+	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Chinook	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Coho	all	47-63	55.4	8	1	9	9.1	0.5	0.125	0.631	1.81	0.227
Char	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
LNC	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
MW	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Other	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
TOTAL							65.7		0.900	452.9		0.982

SITE LOCATION	WETTED WIDTH (m)			SITE COVER (%)		SITE WATER TYPE (%)	MEAN DEPTH (cm)
0	6.7	LOD	20		POOL		
3	6.1	BOULDER	5		RIFFLE	100	10
6	2.3	IN VEG	25		RUN		
9		OVER VEC	55		OTHER		
12		CUTBANK					(cm)
15		DEEP POOL			d90:		6
18					dMax:		10
20		TOTAL	100	10	COMPACTION:		L
24							
	5.0			WETTED WIDTH (m):	3.08		
AREA (M*M):	73.0	MARGIN (M):	14.5	CHANNEL WIDTH (m	7.33		

HABITAT COMMENTS: Stream depth/velocity/bed material transect data was collected at this site.

KISPIOX WATERSHED ELECTROFISHING SITE 1999

STREAM NAME:	CULLON CREEK	SITE:	K12	DATE:	99/09/21
WATERSHED CODE:	470-245700			PHOTO:	R1 21/22
SITE LOCATION:	UPPER CULLON CREEK				
UTM:	09.568198.6160080	ACCESS:	VEHICLE		
GPS LOCATION:	568198 6160080	EFFORT:	PASS 1:	1160	secs
MAINSTEM or SIDECHANNEL:	MAINSTEM		PASS 2:	869	secs

SLOPE (%): 2 TEMP (C): 12 TIME: 1115 COND: 52.3 pH: 7.48

TURBIDITY: CLEAR cm

SAMPLING COMMENTS: No Comments.

POPULATION ESTIMATES:

SPECIES	AGE	FL RANGE	FL MEAN	PASS 1	2	U1+U2	NUMBER	S.E.	N/M*M	N/100M	MEAN WT	BIOMASS g/m*m
Rbt	0+	34-60	44.3	49	15	64	70.6	5.1	1.143	2.813	1.04	1.184
Rbt	1+	67	67.0	1	0	1	1.0	0.0	0.016	0.040	2.90	0.047
Rbt	>1+	73-113	90.4	8	1	9	9.1	0.0	0.148	0.364	9.14	1.352
Chinook	all	67-96	81.5	1	1	2	-	-	-	-	6.15	-
Coho	all	42-69	55.1	24	4	28	28.8	1.3	0.466	1.147	1.93	0.899
Char	all	61	61.0	1	0	1	1.0	0.0	0.016	0.040	2.30	0.037
LNC	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
MW	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Other	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
TOTAL							110.6		1.789	440.5		3.519

SITE LOCATION	WETTED WIDTH (m)			SITE COVER (%)		SITE WATER TYPE (%)	MEAN DEPTH (cm)
0	2.9	LOD	10		POOL	10	46
3	4.2	BOULDER	5		RIFFLE	40	10
6	1.6	IN VEG	10		RUN	50	
9	1.1	OVER VEC	65		OTHER		
12	2.4	CUTBANK	10				(cm)
15	2.9	DEEP POOL			d90:		18
18	1.1				dMax:		33
20	3.5	TOTAL	100	70	COMPACTION:		L
24							
	2.5						

WETTED WIDTH (m): 3

AREA (M*M): 61.8 MARGIN (M): 25.1 CHANNEL WIDTH (m 5.5

HABITAT COMMENTS: Stream depth/velocity/bed material transect data was collected at this site.

STREAM NAME: IRONSIDE CREEK SITE: K13 DATE: 99/09/16
WATERSHED CODE: 470-335400 PHOTO: RT 14/15
SITE LOCATION: D/S BRIDGE ON IRONSIDE CREEK
UTM: 09.559655.6161509 ACCESS: VEHICLE
GPS LOCATION: 559655 6161509 EFFORT: PASS 1: 464 secs
MAINSTEM or SIDECHANNEL: MAINSTEM PASS 2: 371 secs

SLOPE (%): 1 TEMP (C): 8 TIME: 1100 COND: 76.7 pH: 7.73
TURBIDITY: CLEAR cm
SAMPLING COMMENTS: No Comments

POPULATION ESTIMATES:

SPECIES	AGE	FL RANGE	FL MEAN	PASS 1	2	U1+U2	NUMBER	S.E.	N/M*M	N/100M	MEAN WT	BIOMASS g/m*m
Rbt	0+	33-54	42.1	38	15	53	62.8	7.8	1.495	4.484	0.78	1.163
Rbt	1+	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Rbt	>1+	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Chinook	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Coho	all	43-53	47.6	4	1	5	5.3	1.0	0.127	0.381	1.20	0.152
Char	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
LNC	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
MW	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Other	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
TOTAL							68.1		1.622	486.5		1.315

SITE LOCATION	WETTED WIDTH (m)			SITE COVER (%)		SITE WATER TYPE (%)	MEAN DEPTH (cm)
0	1.8	LOD			POOL		
3	3.8	BOULDER			RIFFLE	100	30
6	3.4	IN VEG	60		RUN		
9		OVER VEC	30		OTHER		
12		CUTBANK	10				(cm)
15		DEEP POOL			d90:		5
18					dMax:		7
20		TOTAL	100	50	COMPACTION:		L
24							
	3.0			WETTED WIDTH (m): 7			
AREA (M*M):	42.0	MARGIN (M):	14.0	CHANNEL WIDTH (m 9			

HABITAT COMMENTS: Stream depth/velocity/bed material transect data was collected at this site.

KISPIOX WATERSHED ELECTROFISHING SITE 1999

STREAM NAME:	KISPIOX RIVER	SITE:	k14	DATE:	99/09/27		
WATERSHED CODE:	470-00000			PHOTO:	R? 17/18		
SITE LOCATION:	KISPIOX RIVER D/S CORRAL CREEK(S BEND)						
UTM:	09.551657.6167212	ACCESS:	VEHICLE				
GPS LOCATION:	551657 6167212	EFFORT:	PASS 1:	524	secs		
MAINSTEM or SIDECHANNEL:	MAINSTEM		PASS 2:	218	secs		
SLOPE (%):	0.5	TEMP (C):	7	TIME:	15:55	COND:	80
pH:	n/a	TURBIDIT`	CLEAR	cm			

SAMPLING COMMENTS: Parr condition factor 1.15 (quite fat), fry cf= 1.05) R.P.

POPULATION ESTIMATES:

SPECIES	AGE	FL RANGE	FL MEAN	PASS 1	2	U1+U2	NUMBER	S.E.	N/M*M	N/100M	MEAN WT	BIOMASS g/m*m
Rbt	0+	31-53	42.5	82	7	89	89.7	1.0	1.439	5.037	-	-
Rbt	1+	93	93.0	1	0	1	1.0	0.0	0.016	0.056	-	-
Rbt	>1+	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Chinook	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Coho	all	45	45.0	1	0	1	1.0	0.0	0.016	0.056	-	-
Char	all	39-48	43.3	4	0	4	4.0	0.0	0.064	0.225	-	-
LNC	all	46-90	-	0	4	4	-	-	-	-	-	-
MW	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Other	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
TOTAL							95.7		1.535	537.4		0.000

SITE LOCATION	WETTED WIDTH (m)			SITE COVER (%)		SITE WATER TYPE (%)	MEAN DEPTH (cm)
0	3.5	LOD			POOL		
3		BOULDER	100		RIFFLE	50	
6		IN VEG			RUN	50	
9		OVER VEG			OTHER		
12		CUTBANK					(cm)
15		DEEP POOL			d90:		14
18					dMax:		20
20		TOTAL	100	n/a	COMPACTION:		L
24							
	3.5			WETTED WIDTH (m):	64.3		
AREA (M*M):	62.3	MARGIN (M):	17.8	CHANNEL WIDTH (m`	81.8		

HABITAT COMMENTS: Stream depth/velocity/bed material transect data was collected at this site.

KISPIOX WATERSHED ELECTROFISHING SITE 1999

STREAM NAME:	CLIFFORD CREEK		SITE:	K15	DATE:	99/09/16		
WATERSHED CODE:	470-434800				PHOTO:	RT 16/17		
SITE LOCATION:	D/S CLIFFORD CREEK CULVERT							
UTM:	09.549025.6168220		ACCESS:	VEHICLE				
GPS LOCATION:	549025 6168220		EFFORT:	PASS 1:	584	secs		
MAINSTEM or SIDECHANNEL:	SIDECHANNEL			PASS 2:	431	secs		
SLOPE (%):	1.5	TEMP (C): 9	TIME:	1415	COND:	81.2	pH:	7.96
			TURBIDITY:	CLEAR cm				
SAMPLING COMMENTS:	No comments.							

POPULATION ESTIMATES:

SPECIES	AGE	FL RANGE	FL MEAN	PASS 1	2	U1+U2	NUMBER	S.E.	N/M*M	N/100M	MEAN WT	BIOMASS g/m*m
Rbt	0+	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Rbt	1+	70	70.0	1	0	1	1.0	0.0	0.023	0.079	4.80	0.110
Rbt	>1+	85-122	122.0	11	1	12	12.1	0.4	0.277	0.960	10.38	2.875
Chinook	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Coho	all	58-70	64.0	2	0	2	2.0	0.0	0.046	0.159	3.65	0.167
Char	all	50-112	64.9	8	4	12	16.0	6.9	0.366	1.270	3.93	1.441
LNC	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
MW	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Other	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
TOTAL							31.1		0.712	246.8		4.593

SITE LOCATION	WETTED WIDTH (m)	SITE COVER (%)			SITE WATER TYPE (%)		MEAN DEPTH (cm)
0	5.5	LOD			POOL	25	
3	3.2	BOULDER	55		RIFFLE	50	
6	1.7	IN VEG	10		RUN		
9		OVER VEC	20		OTHER	25	
12		CUTBANK	5				(cm)
15		DEEP POO	10		d90:		50
18					dMax:		100
20		TOTAL	100	10	COMPACTION:		L
24							
	3.5			WETTED WIDTH (m):	5		
AREA (M*M):	43.7	MARGIN (M):	12.6	CHANNEL WIDTH (m	10.5		

HABITAT COMMENTS: Stream depth/velocity/bed material transect data was collected at this site.

KISPIOX WATERSHED ELECTROFISHING SITE 1999

STREAM NAME: SWEETIN RIVER SITE: K16 DATE: 99/09/08
WATERSHED CODE: 470-507200 PHOTO: R1-1,2
SITE LOCATION: D/S SWEETIN RIVER BRIDGE,RIVER LEFT
UTM: 09.542606.6172464 ACCESS: VEHICLE
GPS LOCATION: 542606 6172464 EFFORT: PASS 1: 160 secs
MAINSTEM or SIDECHANNEL: MAINSTEM PASS 2: 100 secs
PASS 3 107
SLOPE (%): 1 TEMP (C): 8 TIME: 1230 COND: 56.8 pH: 7.18
TURBIDITY: CLEAR cm
SAMPLING COMMENTS: No comments.

POPULATION ESTIMATES:

SPECIES	AGE	FL RANGE	FL MEAN	PASS 1	2	U1+U2	NUMBER	S.E.	N/M*M	N/100M	MEAN WT	BIOMASS g/m*m
Rbt	0+	33-41	38.0	3	1	4	4.5	1.5	0.167	0.479	0.58	0.096
Rbt	1+	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Rbt	>1+	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Chinook	all	52-57	53.7	3	0	3	3.0	0.0	0.111	0.319	1.80	0.200
Coho	all	43	-	0	1	1	-	-	-	-	-	-
Char	all	38-81	46.9	10	1	11	11.1	0.4	0.411	1.182	1.27	0.522
LNC	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
MW	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Other	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
TOTAL							18.6		0.689	198.0		0.818

SITE LOCATION	WETTED WIDTH (m)			SITE COVER (%)		SITE WATER TYPE (%)	MEAN DEPTH (cm)
0	0.0	LOD			POOL	90	
3	5.7	BOULDER	100		RIFFLE	10	
6	4.1	IN VEG			RUN		
9	1.7	OVER VEG			OTHER		
12		CUTBANK					(cm)
15		DEEP POOL			d90:		17
18					dMax:		21
20		TOTAL	100	15	COMPACTION:		L
24							
	2.9						

AREA (M*M): 27.0 MARGIN (M): 9.4 WETTED WIDTH (m): 25.5
CHANNEL WIDTH (m 28.8

HABITAT COMMENTS: Stream depth/velocity/bed material transect data was collected at this site.

KISPIOX WATERSHED ELECTROFISHING SITE, 1999

STREAM NAME:	NANGESE RIVER	SITE:	K17			DATE:	99/09/17
WATERSHED CODE:	470-544600					PHOTO:	R1 17/18
SITE LOCATION:	NANGESE RIVER BRIDGE						
UTM:	09.541480.6173332			ACCESS:	VEHICLE		
GPS LOCATION:	541480 6173332			EFFORT:	PASS 1:	655	secs
MAINSTEM or SIDECHANNEL:	MAINSTEM				PASS 2:	574	secs

SLOPE (%): 0.5 TEMP (C): 8 TIME: 1200 COND: 47 pH: 7.1

TURBIDITY: CLEAR cm

SAMPLING COMMENTS: No other Comments.

POPULATION ESTIMATES:

SPECIES	AGE	FL RANGE	FL MEAN	PASS 1	2	U1+U2	NUMBER	S.E.	N/M*M	N/100M	MEAN WT	BIOMASS g/m*m
Rbt	0+	36-49	41.9	8	2	10	10.7	1.4	0.150	0.441	0.76	0.114
Rbt	1+	82	82.0	1	0	1	1.0	0.0	0.014	0.041	5.80	0.082
Rbt	>1+	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Chinook	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Coho	all	57	57.0	1	0	1	1.0	0.0	0.014	0.041	2.30	0.032
Char	all	38-136	51.0	12	8	20	36.0	26.8	0.506	1.489	2.39	1.210
LNC	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
MW	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Other	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
TOTAL							48.7		0.684	201.4		1.437

SITE LOCATION	WETTED WIDTH (m)			SITE COVER (%)		SITE WATER TYPE (%)	MEAN DEPTH (cm)
0	2.5	LOD			POOL		
3	3.4	BOULDER	80		RIFFLE	15	45
6	3.2	IN VEG	10		RUN	85	
9	3.0	OVER VEC	5		OTHER		
12	3.4	CUTBANK	5				(cm)
15	3.1	DEEP POOL			d90:		20
18	2.0				dMax:		65
20		TOTAL	100	40	COMPACTION:		M
24							
	2.9						

				WETTED WIDTH (m):	10.6
AREA (M*M):	71.1	MARGIN (M):	24.2	CHANNEL WIDTH (m	12.75

HABITAT COMMENTS: Stream depth/velocity/bed material transect data was collected at this site.

KISPIOX WATERSHED ELECTROFISHING SITE, 1999

STREAM NAME:	NANGESE RIVER	SITE:	K18	DATE:	99/09/17		
WATERSHED CODE:	470-544600			PHOTO:	R1-19,20		
SITE LOCATION:	UPPER NANGESE BESIDE ROAD						
UTM:	09.536337.6176321	ACCESS:	VEHICLE				
GPS LOCATION:	536440 6176321	EFFORT:	PASS 1:	371	secs		
MAINSTEM or SIDECHANNEL:	m		PASS 2:	494	secs		
SLOPE (%):	<1	TEMP (C):	9	TIME:	1530	COND:	60
pH:	7.4	TURBIDITY:	CLEAR	cm			

SAMPLING COMMENTS: No comments.

POPULATION ESTIMATES:

SPECIES	AGE	FL RANGE	FL MEAN	PASS 1	2	U1+U2	NUMBER	S.E.	N/M*M	N/100M	MEAN WT	BIOMASS g/m*m
Rbt	0+	30-52	38.8	7	5	12	24.5	30.3	0.274	2.000	0.72	0.197
Rbt	1+	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Rbt	>1+	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Chinook	all	38-62	48.2	26	1	27	27.0	0.2	0.302	2.207	1.33	0.404
Coho	all	42-57	47.8	7	2	9	9.8	1.7	0.110	0.800	1.44	0.158
Char	all	35-50	42.7	13	14	27	-	-	-	-	0.95	-
LNC	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
MW	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Other	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
TOTAL							61.3		0.686	500.7		0.759

SITE LOCATION	WETTED WIDTH (m)			SITE COVER (%)		SITE WATER TYPE (%)	MEAN DEPTH (cm)
0	6.1	LOD			POOL		
3	8.7	BOULDER			RIFFLE		
6	7.1	IN VEG			RUN	99	
9		OVER VEC	50		OTHER		
12		CUTBANK	50				(cm)
15		DEEP POOL			d90:		7.5
18					dMax:		15
20		TOTAL	100	10	COMPACTION:		L
24							
	7.3			WETTED WIDTH (m):	13.7		
AREA (M*M):	89.4	MARGIN (M):	12.3	CHANNEL WIDTH (m	15.6		

HABITAT COMMENTS: Stream depth/velocity/bed material transect data was collected at this site.

7.2 Appendix 2. 1999 Skeena River Site, Habitat and Fish Data

Appendix 2. 1999 Skeena River Site, Habitat and Fish Data

SKEENA WATERSHED ELECTROFISHING SITE 1999

STREAM NAME: SKEENA RIVER SITE: SK1 DATE: 99/09/22
WATERSHED CODE: 400 PHOTO: R2-2&3
SITE LOCATION: 14km u/s Kluatantan
UTM: 09.542327.6307930 ACCESS: Helicopter
GPS LOCATION: 542327 6307930 EFFORT: PASS 1: 1162 secs
MAINSTEM or SIDECHANNEL: M PASS 2: 646 secs

SLOPE (%): 1.5 TEMP (C): 7 TIME: 12:00 COND: 79.2 pH: 8.1
TURBIDITY: CLEAR cm
SAMPLING COMMENTS: No Comments.

POPULATION ESTIMATES:

SPECIES	AGE	FL RANGE	FL MEAN	PASS 1	2	U1+U2	NUMBER	S.E.	N/M*M	N/100M	MEAN WT	BIOMASS g/m*m
Rbt	0+	34	32.8	4	0	4	4.0	0.0	0.017	0.253	0.27	0.005
Rbt	1+	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Rbt	>1+	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Chinook	all	39-67	52.7	46	9	55	57.2	2.2	0.244	3.620	1.58	0.385
Coho	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Char	all	40-41	40.5	2	0	2	2.0	0.0	0.009	0.127	1.00	0.009
LNC	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
MW	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Other	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
TOTAL							63.2		0.270	399.9		0.398

SITE LOCATION	WETTED WIDTH (m)			SITE COVER (%)		SITE WATER TYPE (%)	MEAN DEPTH (cm)
0	12.3	LOD			POOL		
3	15.0	BOULDER	100		RIFFLE	20	22
6	17.2	IN VEG			RUN	60	
9		OVER VEG			OTHER	20	
12		CUTBANK					(cm)
15		DEEP POOL			d90:	35	
18					dMax:		
20		TOTAL	100	40	COMPACTION:	M	
24							
	14.8			WETTED WIDTH (m):	46.9		
AREA (M*M):	234.4	MARGIN (M):	15.8	CHANNEL WIDTH (m`	59.3		

HABITAT COMMENTS: Stream depth/velocity/bed material transect data was collected at this site.

SKEENA WATERSHED ELECTROFISHING SITE 1999

STREAM NAME:	SKEENA RIVER	SITE:	SK2	DATE:	99/09/22		
WATERSHED CODE:	400			PHOTO:	R1-25, R2- 1		
SITE LOCATION:	Skeena / Kluatantan confluence						
UTM:	09.552239.6298261	ACCESS:	HELICOPTER				
GPS LOCATION:	552239 6298261	EFFORT:	PASS 1:	867	secs		
MAINSTEM or SIDECHANNEL:	M		PASS 2:	608	secs		
SLOPE (%):	1	TEMP (C):	7	TIME:	10:00	COND:	115
pH:	8.05	TURBIDITY:	50+ cm				

SAMPLING COMMENTS: No comments.

POPULATION ESTIMATES:

SPECIES	AGE	FL RANGE	FL MEAN	PASS 1	2	U1+U2	NUMBER	S.E.	N/M*M	N/100M	MEAN WT	BIOMASS g/m*m
Rbt	0+	29-45	35.7	26	8	34	37.6	3.7	0.328	2.282	0.59	0.195
Rbt	1+	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Rbt	>1+	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Chinook	all	38-61	48.8	10	0	10	10.0	0.0	0.087	0.608	1.27	0.110
Coho	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Char	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
LNC	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
MW	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Other	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
TOTAL							47.6		0.415	288.9		0.305

SITE LOCATION	WETTED WIDTH (m)	SITE COVER (%)			SITE WATER TYPE (%)		MEAN DEPTH (cm)
0	6.4	LOD			POOL		
3	7.6	BOULDER	100		RIFFLE	10	36
6	6.6	IN VEG			RUN	90	
9	7.3	OVER VEG			OTHER		
12		CUTBANK					(cm)
15		DEEP POOL			d90:		20
18					dMax:		35
20		TOTAL	100	60	COMPACTION:		L
24							
	7.0						
AREA (M*M):	114.6	MARGIN (M):	16.5				

WETTED WIDTH (m): 50.4

CHANNEL WIDTH (m 82.7

HABITAT COMMENTS: Stream depth/velocity/bed material transect data was collected at this site.

SKEENA WATERSHED ELECTROFISHING SITE 1999

STREAM NAME: SKEENA RIVER SITE: SK3 DATE: 99/09/22
WATERSHED CODE: 400 PHOTO: R2-4
SITE LOCATION: 22 KM D/S KLUATANTAN
UTM: 09.570516.6285868 ACCESS: HELICOPTER
GPS LOCATION: 570516 6285868 EFFORT: PASS 1: 617 secs
MAINSTEM or SIDECHANNEL: M PASS 2: 530 secs

SLOPE (%): <1 TEMP: 8 TIME: 14:00 COND: 129 pH: 8.05
TURBIDITY: CLEAR cm
SAMPLING COMMENTS: No other comments

POPULATION ESTIMATES:

SPECIES	AGE	FL RANGE	FL MEAN	PASS 1	2	U1+U2	NUMBER	S.E.	N/M*M	N/100M	MEAN WT	BIOMASS g/m*m
Rbt	0+	32-41	37.1	12	4	16	18.0	3.0	0.146	1.700	0.46	0.067
Rbt	1+	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Rbt	>1+	128	128.0	1	0	1	1.0	0.0	0.008	0.094	22.40	0.182
Chinook	all	42-69	53.0	48	18	66	76.8	7.8	0.622	7.252	1.51	0.942
Coho	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Char	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
LNC	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
MW	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Other	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
TOTAL							95.8		0.777	904.6		1.191

SITE LOCATION	WETTED WIDTH (m)			SITE COVER (%)		SITE WATER TYPE (%)	MEAN DEPTH (cm)
0	14.7	LOD			POOL		
3	8.6	BOULDER	100		RIFFLE	10	
6		IN VEG			RUN	80	
9		OVER VEG			OTHER	10	
12		CUTBANK					(cm)
15		DEEP POOL			d90:		15
18					dMax:		20
20		TOTAL	100	60	COMPACTION:		L
24							
	11.7			WETTED WIDTH (m):	96		
AREA (M*M):	123.4	MARGIN (M):	10.6	CHANNEL WIDTH (m`	99		

HABITAT COMMENTS: Stream depth/velocity/bed material transect data was collected at this site.
No other comments

SKEENA WATERSHED ELECTROFISHING SITE 1999

STREAM NAME: SKEENA RIVER SITE: SK4 DATE: 99/09/22
WATERSHED CODE: 400 PHOTO: R2-5,6
SITE LOCATION: 43.7KM D/S KLUATANTAN
UTM: 9.585411.6269719 ACCESS: HELICOPTER
GPS LOCATION: 585411 6269719 EFFORT: PASS 1: 771 secs
MAINSTEM or SIDECHANNEL: M PASS 2: 533 secs

SLOPE (%): <1 TEMP (C): 8 TIME: 16:00 COND: 128 pH: 7.8
TURBIDITY: CLEAR cm
SAMPLING COMMENTS: No other comments

POPULATION ESTIMATES:

SPECIES	AGE	FL RANGE	FL MEAN	PASS 1	2	U1+U2	NUMBER	S.E.	N/M*M	N/100M	MEAN WT	BIOMASS g/m*m
Rbt	0+	30-49	37.7	50	8	58	59.5	1.7	0.820	2.871	0.60	0.489
Rbt	1+	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Rbt	>1+	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Chinook	all	50-66	59.6	8	1	9	9.1	0.5	0.126	0.441	2.31	0.291
Coho	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Char	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
LNC	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
MW	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Other	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
TOTAL							68.7		0.946	331.2		0.780

SITE LOCATION	WETTED WIDTH (m)			SITE COVER (%)		SITE WATER TYPE (%)	MEAN DEPTH (cm)
0	2.8	LOD			POOL		
3	3.5	BOULDER	100		RIFFLE	1	
6	4.6	IN VEG			RUN	99	
9	3.6	OVER VEG			OTHER		
12	3.0	CUTBANK					(cm)
15		DEEP POOL			d90:		20
18					dMax:		28
20		TOTAL	100	40	COMPACTION:		L
24							
	3.5						

WETTED WIDTH (m): 65
AREA (M*M): 72.6 MARGIN (M): 20.7 CHANNEL WIDTH (m 72

HABITAT COMMENTS: Stream depth/velocity/bed material transect data was collected at this site.

SKEENA WATERSHED ELECTROFISHING SITE 1999

STREAM NAME: SKEENA RIVER SITE: SK5 DATE: 99/09/23
WATERSHED CODE: 400 PHOTO: R2-7,8,9
SITE LOCATION: 2KM U/S SUSTUT RIVER
UTM: 09.559597.6244271 ACCESS: HELICOPTER
GPS LOCATION: 599597 6244271 EFFORT: PASS 1: 829 secs
MAINSTEM or SIDECHANNEL: M PASS 2: 502 secs

SLOPE (%): <1 TEMP (C): 8 TIME: 10:00 COND: 119 pH: 7.9
TURBIDITY: 10 cm
SAMPLING COMMENTS: No other comments

POPULATION ESTIMATES:

SPECIES	AGE	FL RANGE	FL MEAN	PASS 1	2	U1+U2	NUMBER	S.E.	N/M*M	N/100M	MEAN WT	BIOMASS g/m*m
Rbt	0+	35-47	40.8	13	1	14	14.1	0.3	0.173	1.010	0.65	0.112
Rbt	1+	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Rbt	>1+	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Chinook	all	46-66	54.0	13	0	13	13.0	0.0	0.160	0.932	1.71	0.273
Coho	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Char	all	87-240	163.5	1	1	2	-	-	-	-	5.70	-
LNC	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
MW	all	55	55.0	1	0	1	1.0	0.0	0.012	0.072	1.50	0.018
Other	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
TOTAL							28.1		0.345	201.3		0.403

SITE LOCATION	WETTED WIDTH (m)			SITE COVER (%)		SITE WATER TYPE (%)	MEAN DEPTH (cm)
0	4.8	LOD			POOL		
3	9.1	BOULDER	100		RIFFLE		
6	6.5	IN VEG			RUN	99	
9	5.8	OVER VEG			OTHER		
12	3.0	CUTBANK					(cm)
15		DEEP POOL			d90:		15
18					dMax:		25
20		TOTAL	100	40	COMPACTION:		L
24							
	5.8						

AREA (M*M): 81.4 MARGIN (M): 14.0
WETTED WIDTH (m): 19.8
CHANNEL WIDTH (m` 30

HABITAT COMMENTS: Stream depth/velocity/bed material transect data was collected at this site.

SKEENA WATERSHED ELECTROFISHING SITE 1999

STREAM NAME:	SKEENA RIVER	SITE:	SK6	DATE:	99/09/23				
WATERSHED CODE:	400			PHOTO:	R2-10,11				
SITE LOCATION:	14KM D/S SUSTUT RIVER								
UTM:	09.58900.6236599	ACCESS:	HELICOPTER						
GPS LOCATION:	589000 6236599	EFFORT:	PASS 1:	598	secs				
MAINSTEM or SIDECHANNEL:			PASS 2:	592	secs				
SLOPE (%):	<1	TEMP (C):	9	TIME:	11:30	COND:	104.7	pH:	8.01
		TURBIDITY:	20	cm					

SAMPLING COMMENTS: Fish were found in pocket water at outer riffle area, very little close to shore.

POPULATION ESTIMATES:

SPECIES	AGE	FL RANGE	FL MEAN	PASS 1	2	U1+U2	NUMBER	S.E.	N/M*M	N/100M	MEAN WT	BIOMASS g/m*m
Rbt	0+	40	40.0	1	1	2	0.0	0.0	-	-	0.85	-
Rbt	1+	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Rbt	>1+	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Chinook	all	39-62	52.0	29	15	44	60.1	14.7	0.444	4.059	1.84	0.817
Coho	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Char	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
LNC	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
MW	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Other	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
TOTAL							60.1		0.444	405.9		0.817

SITE LOCATION	WETTED WIDTH (m)			SITE COVER (%)		SITE WATER TYPE (%)	MEAN DEPTH (cm)
0	7.3	LOD			POOL		
3	11.8	BOULDER	100		RIFFLE	80	10
6	8.4	IN VEG			RUN		
9		OVER VEG			OTHER	20	
12		CUTBANK					(cm)
15		DEEP POOL			d90:		30
18					dMax:		60
20		TOTAL	100	n/a	COMPACTION:		L
24							
	9.1			WETTED WIDTH (m):	150		
AREA (M*M):	135.4	MARGIN (M):	14.8	CHANNEL WIDTH (m	200		

HABITAT COMMENTS: Stream depth/velocity/bed material transect data was collected at this site.

SKEENA WATERSHED ELECTROFISHING SITE 1999

STREAM NAME:	SKEENA RIVER	SITE:	SK7	DATE:	99/09/23
WATERSHED CODE:	400			PHOTO:	R2-12&13
SITE LOCATION:	32KM D/S SUSTUT RIVER				
UTM:	09.571156.6236680	ACCESS:	HELICOPTER		
GPS LOCATION:	571156 6236680	EFFORT:	PASS 1:	645	secs
MAINSTEM or SIDECHANNEL:	M		PASS 2:	504	secs

SLOPE (%): 1.5 TEMP (C): 8 TIME: COND: 150 pH: 8.02

TURBIDITY: 20 cm

SAMPLING COMMENTS: No other comments

POPULATION ESTIMATES:

SPECIES	AGE	FL RANGE	FL MEAN	PASS 1	2	U1+U2	NUMBER	S.E.	N/M*M	N/100M	MEAN WT	BIOMASS g/m*m
Rbt	0+	37-40	38.0	2	2	4	-	-	-	-	0.70	-
Rbt	1+	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Rbt	>1+	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Chinook	all	43-76	55.7	71	38	109	152.8	25.9	1.018	10.535	2.83	2.885
Coho	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Char	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
LNC	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
MW	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Other	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
TOTAL							152.8		1.018	1053.5		2.885

SITE LOCATION	WETTED WIDTH (m)			SITE COVER (%)		SITE WATER TYPE (%)	MEAN DEPTH (cm)
0	8.0	LOD			POOL		
3	12.9	BOULDER	100		RIFFLE	85	30
6	12.0	IN VEG			RUN	10	
9	8.5	OVER VEG			OTHER	5	
12		CUTBANK					(cm)
15		DEEP POOL			d90:		30
18					dMax:		60
20		TOTAL	100	15	COMPACTION:		L
24							
	10.4			WETTED WIDTH (m):	150		
AREA (M*M):	150.1	MARGIN (M):	14.5	CHANNEL WIDTH (m`	200		

HABITAT COMMENTS: Stream depth/velocity/bed material transect data was collected at this site.

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SKEENA WATERSHED ELECTROFISHING SITE 1999

STREAM NAME: SKEENA RIVER SITE: SK8 DATE: 99/09/29
WATERSHED CODE: 400 PHOTO: R2- 18 & 19
SITE LOCATION: SKEENA@ CANYON CREEK
UTM: 09.567349.6233837 ACCESS: HELICOPTER
GPS LOCATION: 567349 6233837 EFFORT: PASS 1: 1038 secs
MAINSTEM or SIDECHANNEL: S PASS 2: 827 secs

SLOPE (%): 1 TEMP (C): 4 TIME: 10:00 COND: 143 pH: 8.5
TURBIDITY: CLEAR cm
SAMPLING COMMENTS: Fry located within 1st 3-m of margins among cobble, parr located on outside of site among boulders.

POPULATION ESTIMATES:

SPECIES	AGE	FL RANGE	FL MEAN	PASS 1	2	U1+U2	NUMBER	S.E.	N/M*M	N/100M	MEAN WT	BIOMASS g/m*m
Rbt	0+	33-52	41.2	24	7	31	33.9	3.2	0.230	2.202	0.92	0.211
Rbt	1+	82-91	86.5	2	0	2	-	-	-	-	7.05	-
Rbt	>1+	111-163	126.4	3	2	5	9.0	13.4	0.061	0.585	22.66	1.384
Chinook	all	46-73	59.4	21	7	28	31.5	4.0	0.214	2.047	2.55	0.545
Coho	all	59-63	61.7	3	0	3	3.0	0.0	0.020	0.195	3.07	0.062
Char	all	48-88	63.3	2	4	6	-	-	-	-	3.12	-
LNC	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
MW	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Other	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
TOTAL							77.4		0.525	502.8		2.202

SITE LOCATION	WETTED WIDTH (m)			SITE COVER (%)		SITE WATER TYPE (%)	MEAN DEPTH (cm)
0	10.5	LOD			POOL		
3	8.9	BOULDER	100		RIFFLE	20	
6	9.3	IN VEG			RUN	75	
9		OVER VEG			OTHER	5	
12		CUTBANK					(cm)
15		DEEP POOL			d90:		50
18					dMax:		55
20		TOTAL	100	40	COMPACTION:		L
24							
	9.6			WETTED WIDTH (m):			
AREA (M*M):	147.3	MARGIN (M):	15.4	CHANNEL WIDTH (m):			

HABITAT COMMENTS: Stream depth/velocity/bed material transect data was collected at this site.

SKEENA WATERSHED ELECTROFISHING SITE 1999

STREAM NAME:	SKEENA RIVER	SITE:	SK9	DATE:	99/09/29		
WATERSHED CODE:	400			PHOTO:	R2-20 &21		
SITE LOCATION:	20KM D/S CANYON CREEK						
UTM:	09.563122.6217468	ACCESS:	HELICOPTER				
GPS LOCATION:	563122 6217468	EFFORT:	PASS 1:	599	secs		
MAINSTEM or SIDECHANNEL:	M		PASS 2:	656	secs		
SLOPE (%):	0.5	TEMP (C):		TIME:	13:00	COND:	-
						pH:	-
		TURBIDITY:	CLEAR	cm			

SAMPLING COMMENTS: Fry located in slower water between boulders 3 m from shore. Parr located in current among 3-4 meter boulders. Fry were recently emerged.

POPULATION ESTIMATES:

SPECIES	AGE	FL RANGE	FL MEAN	PASS 1	2	U1+U2	NUMBER	S.E.	N/M*M	N/100M	MEAN WT	BIOMASS g/m*m
Rbt	0+	34-55	41.6	9	13	22	-	-	-	-	1.02	-
Rbt	1+	77-92	85.0	1	2	3	-	-	-	-	7.07	-
Rbt	>1+	127-144	135.5	2	0	2	2.0	0.0	0.027	0.117	26.45	0.725
Chinook	all	42-82	59.3	38	8	46	48.1	2.3	0.660	2.823	2.80	1.847
Coho	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Char	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
LNC	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
MW	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Other	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
TOTAL							50.1		0.687	294.0		2.572

SITE LOCATION	WETTED WIDTH (m)		SITE COVER (%)			SITE WATER TYPE (%)	MEAN DEPTH (cm)
0	6.5	LOD			POOL		
3	4.3	BOULDER	100		RIFFLE	10	34
6		IN VEG			RUN	80	
9		OVER VEG			OTHER	10	
12		CUTBANK					(cm)
15		DEEP POOL			d90:		80
18					dMax:		120
20		TOTAL	100	40	COMPACTION:		M
24							
	4.3			WETTED WIDTH (m):	69.44		
AREA (M*M):	73.0	MARGIN (M):	17.1	CHANNEL WIDTH (m	91.95		

HABITAT COMMENTS: Stream depth/velocity/bed material transect data was collected at this site.

NOTE: Site area calculated as the area of a triangle (widths are half the distance in meters of two sides of the triangle, margin is the third side).

SKEENA WATERSHED ELECTROFISHING SITE 1999

STREAM NAME: SKEENA RIVER SITE: SK 10 DATE: 99/09/17
WATERSHED CODE: 400 PHOTO: R2-22,23
SITE LOCATION: 5KM D/S SICINTINE RIVER
UTM: 09.515195.6209846 ACCESS: HELICOPTER
GPS LOCATION: 565195 6209846 EFFORT: PASS 1: 1209 secs
MAINSTEM or SIDECHANNEL: M PASS 2: 604 secs

SLOPE (%): 0.5 TEMP (C): 6 TIME: 10:00 COND: 151.8 pH: 8.6
TURBIDITY: CLEAR cm
SAMPLING COMMENTS: Steelhead fry in slow water, along edges, coho and chinook throughout.

POPULATION ESTIMATES:

SPECIES	AGE	FL RANGE	FL MEAN	PASS 1	2	U1+U2	NUMBER	S.E.	N/M*M	N/100M	MEAN WT	BIOMASS g/m*m
Rbt	0+	31-46	37.5	20	3	23	23.5	1.0	0.268	1.357	0.69	0.184
Rbt	1+	65	65.0	1	0	1	1.0	0.0	0.011	0.058	-	-
Rbt	>1+	137	137.0	1	0	1	1.0	0.0	0.011	0.058	30.10	0.343
Chinook	all	43-77	56.5	66	9	75	76.4	1.6	0.871	4.407	-	-
Coho	all	51-67	60.4	4	1	5	5.3	1.0	0.061	0.308	-	-
Char	all	93-111	103.7	3	0	3	3.0	0.0	0.034	0.173	-	-
LNC	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
MW	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Other	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
TOTAL							110.3		1.256	636.0		0.527

SITE LOCATION	WETTED WIDTH (m)			SITE COVER (%)		SITE WATER TYPE (%)	MEAN DEPTH (cm)
0	1.8	LOD			POOL		
3	3.0	BOULDER	100		RIFFLE	5	
6	5.1	IN VEG			RUN	95	
9	7.8	OVER VEG			OTHER		
12	7.7	CUTBANK					(cm)
15		DEEP POOL			d90:		40
18					dMax:		180
20		TOTAL	100	30	COMPACTION:		L
24							
	5.1						

AREA (M*M): 87.8 MARGIN (M): 17.3
WETTED WIDTH (m): 97
CHANNEL WIDTH (m 146.9

HABITAT COMMENTS: Stream depth/velocity/bed material transect data was collected at this site.

SKEENA WATERSHED ELECTROFISHING SITE 1999

STREAM NAME: SKEENA RIVER SITE: SK11 DATE: 99/09/30
WATERSHED CODE: 400 PHOTO: R2-24,25
SITE LOCATION: 20KM D/S SICINTINE, 2KM U/S KULDO BRIDGE
UTM: 09.569911.6194874 ACCESS: HELICOPTER
GPS LOCATION: 569911 6194874 EFFORT: PASS 1: 725 secs
MAINSTEM or SIDECHANNEL: M PASS 2: 416 secs

SLOPE (%): 1.5 TEMP (C): 5 TIME: 14:00 COND: 133 pH: 8.3
TURBIDITY: CLEAR cm
SAMPLING COMMENTS: Fry captured in lower insider portion of site. Limited fry habitat available, substrate small for parr.

POPULATION ESTIMATES:

SPECIES	AGE	FL RANGE	FL MEAN	PASS 1	2	U1+U2	NUMBER	S.E.	N/M*M	N/100M	MEAN WT	BIOMASS g/m*m
Rbt	0+	42	38.5	2	0	2	2.0	0.0	0.025	0.153	0.55	0.014
Rbt	1+	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Rbt	>1+	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Chinook	all	45-68	55.0	12	0	12	12.0	0.0	0.148	0.916	-	-
Coho	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Char	all	36-73	54.5	1	1	2	-	-	-	-	2.25	-
LNC	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
MW	all	42-54	49.0	6	1	7	7.2	0.6	0.089	0.550	1.19	0.105
Other	all	77	-	1	0	1	1.0	0.0	0.012	0.076	-	-
TOTAL							22.2		0.273	169.5		0.119

SITE LOCATION	WETTED WIDTH (m)			SITE COVER (%)		SITE WATER TYPE (%)	MEAN DEPTH (cm)
0	5.5	LOD			POOL		
3	5.6	BOULDER	100		RIFFLE	10	54
6	6.2	IN VEG			RUN	90	
9	7.5	OVER VEG			OTHER		
12		CUTBANK					(cm)
15		DEEP POOL			d90:		30
18					dMax:		50
20		TOTAL	100	20	COMPACTION:		L
24							
	6.2			WETTED WIDTH (m):	105.6		
AREA (M*M):	81.2	MARGIN (M):	13.1	CHANNEL WIDTH (m	115		

HABITAT COMMENTS: Stream depth/velocity/bed material transect data was collected at this site.

SKEENA WATERSHED ELECTROFISHING SITE 1999

STREAM NAME: SKEENA RIVER
SITE: SK 12
DATE: 99/09/30
WATERSHED CODE: 400
PHOTO: R2-26
SITE LOCATION: U/S BABINE CONFLUENCE
UTM: 09.564738.6184525
ACCESS: HELICOPTER
GPS LOCATION: 564738 6184525
EFFORT: PASS 1: 1100 secs
MAINSTEM or SIDECHANNEL: M
PASS 2: 507 secs

SLOPE (%): 0.75
TEMP (C): 4
TIME: 17:00
COND: 139
pH: 8.36
TURBIDITY: CLEAR cm

SAMPLING COMMENTS: Fry restricted to margins & slow flow between boulders. Parr, chinook, char in faster water between boulders. 45% of site suitable for and used by fry.

POPULATION ESTIMATES:

SPECIES	AGE	FL RANGE	FL MEAN	PASS 1	2	U1+U2	NUMBER	S.E.	N/M*M	N/100M	MEAN WT	BIOMASS g/m*m
Rbt	0+	32-47	37.0	15	4	19	20.5	2.2	0.160	1.349	0.73	0.117
Rbt	1+	76-90	81.5	4	0	4	4.0	0.0	0.031	0.264	6.60	0.206
Rbt	>1+	94	94.0	1	0	1	1.0	0.0	0.008	0.066	9.50	0.074
Chinook	all	41-78	55.5	43	6	49	50.0	1.3	0.391	3.296	-	-
Coho	all	50	50.0	1	0	1	1.0	0.0	0.008	0.066	-	-
Char	all	43-113	73.4	3	2	5	9.0	13.4	0.070	0.594	7.17	0.504
LNC	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
MW	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Other	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
TOTAL							85.4		0.668	563.5		0.902

SITE LOCATION	WETTED WIDTH (m)			SITE COVER (%)		SITE WATER TYPE (%)	MEAN DEPTH (cm)
0	9.3	LOD			POOL		
3	10.1	BOULDER	100		RIFFLE	20	
6	7.9	IN VEG			RUN	80	
9	6.5	OVER VEG			OTHER		
12		CUTBANK					(cm)
15		DEEP POOL			d90:		90
18					dMax:		120
20		TOTAL	100	40	COMPACTION:		L
24							
	8.4						

AREA (M*M): 127.9
MARGIN (M): 15.2
WETTED WIDTH (m): 90
CHANNEL WIDTH (m` 208

HABITAT COMMENTS: Stream depth/velocity/bed material transect data was collected at this site.

Appendix 2. 1999 Skeena River Site, Habitat and Fish Data

SKEENA WATERSHED ELECTROFISHING SITE 1999

STREAM NAME: SKEENA RIVER SITE: SK13 DATE: 99/09/21
WATERSHED CODE: 400 PHOTO: R1-23 & 24
SITE LOCATION: SKEENA ACROSS FROM THE SALMON RIVER
UTM: 9.583632.6134416 ACCESS: VEHICLE
GPS LOCATION: 583632 6134416 EFFORT: PASS 1: 1131 secs
MAINSTEM or SIDECHANNEL: M PASS 2: n/a secs

SLOPE (%): 0.5 TEMP (C): 11 TIME: 14:40 COND: 95.8 pH: 7.9
TURBIDITY: 20 cm
SAMPLING COMMENTS: No other comments

POPULATION ESTIMATES:

SPECIES	AGE	FL RANGE	FL MEAN	PASS 1	2	U1+U2	NUMBER	S.E.	N/M*M	N/100M	MEAN WT	BIOMASS g/m*m
Rbt	0+	34-54	42.9	9	3	12	13.5	2.6	0.182	0.775	1.00	0.182
Rbt	1+	-	-	0	0	0	0.0	0.0	0.000	0.000	0.00	0.000
Rbt	>1+	73-135	91.9	9	0	9	9.0	0.0	0.121	0.516	9.40	1.138
Chinook	all	48-82	59.8	38	11	49	53.5	4.0	0.719	3.069	2.35	1.689
Coho	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Char	all	83	83.0	1	0	1	1.0	0.0	0.013	0.057	5.60	0.075
LNC	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
MW	all	48	48.0	1	0	1	1.0	0.0	0.013	0.057	1.30	0.017
Other	all	-	0.0	8	6	14	32.0	44.9	0.430	1.836	-	-
TOTAL							110.0		1.479	631.2		3.101

SITE LOCATION	WETTED WIDTH (m)			SITE COVER (%)		SITE WATER TYPE (%)	MEAN DEPTH (cm)
0	4.7	LOD			POOL		
3	3.7	BOULDER	100		RIFFLE	5	
6	3.5	IN VEG			RUN	95	
9	5.3	OVER VEG			OTHER		
12	3.4	CUTBANK					(cm)
15	5.0	DEEP POOL			d90:		60
18					dMax:		110
20		TOTAL	100	30	COMPACTION:		L
24							
	4.3			WETTED WIDTH (m):	160		
AREA (M*M):	74.3	MARGIN (M):	17.4	CHANNEL WIDTH (m	187		

HABITAT COMMENTS: Stream depth/velocity/bed material transect data was collected at this site.

SKEENA WATERSHED ELECTROFISHING SITE 1999

STREAM NAME: SKEENA RIVER SITE: SK14 DATE: 99/10/08
WATERSHED CODE: 400 PHOTO: R3-3,4
SITE LOCATION: DOWNSTREAM BABINE #1
UTM: 09.579384.6169373 ACCESS: IELICOPTER
GPS LOCATION: 579384 6169373 EFFORT: PASS 1: 936 secs
MAINSTEM or SIDECHANNEL: M PASS 2: 0 secs

SLOPE (%): 1.5 TEMP (C): 7 TIME: 10:50 COND: 55 pH: 8.2
TURBIDITY: 40 cm
SAMPLING COMMENTS: Fry were captured amoung boulders and margins. Site appeared to have excellent habitat, slow flow and large substrate.

POPULATION ESTIMATES:

SPECIES	AGE	FL RANGE	FL MEAN	PASS 1	2	U1+U2	NUMBER	S.E.	N/M*M	N/100M	MEAN WT	BIOMASS g/m*m
Rbt	0+	49	45.7	3	0	3	3.0	0.0	0.019	0.189	1.03	0.020
Rbt	1+	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Rbt	>1+	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Chinook	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Coho	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Char	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
LNC	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
MW	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Other	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
TOTAL							3.0		0.019	18.9		0.020

SITE LOCATION	WETTED WIDTH (m)			SITE COVER (%)		SITE WATER TYPE (%)	MEAN DEPTH (cm)
0	11.5	LOD			POOL		
3	10.2	BOULDER	80		RIFFLE		
6	10.3	IN VEG	20		RUN	99	
9	9.3	OVER VEG			OTHER	1	
12	7.6	CUTBANK					(cm)
15		DEEP POOL			d90:		55
18					dMax:		60
20		TOTAL	100	40	COMPACTION:		L
24							
	9.8			WETTED WIDTH (m):	10.75		
AREA (M*M):	155.5	MARGIN (l	15.9	CHANNEL WIDTH (m	26.01		

HABITAT COMMENTS: Stream depth/velocity/bed material transect data was collected at this site.

SKEENA WATERSHED ELECTROFISHING SITE 1999

STREAM NAME:	SKEENA RIVER	SITE:	SK15	DATE:	99/10/08
WATERSHED CODE:	400			PHOTO:	R3-5,6
SITE LOCATION:	DOWNSTREAM BABINE #2				
UTM:	09.584482.6151405	ACCESS:	HELICOPTER		
GPS LOCATION:	584482 6151405	EFFORT:	PASS 1:	783	secs
MAINSTEM or SIDECHANNEL:	M		PASS 2:	816	secs

SLOPE (%): 0.7 TEMP (C): 7 TIME: 14:00 COND: 81 pH: 8.3

TURBIDITY: 45 cm

SAMPLING COMMENTS: Coho, chinook, rainbow/steelhead fry located in first 4-m if habitat closest to shore.

POPULATION ESTIMATES:

SPECIES	AGE	FL RANGE	FL MEAN	PASS 1	2	U1+U2	NUMBER	S.E.	N/M*M	N/100M	MEAN WT	BIOMASS g/m*m
Rbt	0+	40-46	44.0	3	2	5	9.0	13.4	0.109	0.833	1.23	0.134
Rbt	1+	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Rbt	>1+	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Chinook	all	35-105	67.0	19	4	23	24.1	1.6	0.291	2.228	5.90	1.719
Coho	all	46-76	57.2	25	6	31	32.9	2.3	0.398	3.046	2.37	0.943
Char	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
LNC	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
MW	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Other	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
TOTAL							66.0		0.799	610.8		2.796

SITE LOCATION	WETTED WIDTH (m)			SITE COVER (%)		SITE WATER TYPE (%)	MEAN DEPTH (cm)
0	6.4	LOD			POOL		
3	8.5	BOULDER	100		RIFFLE	5	
6	8.0	IN VEG			RUN	95	
9		OVER VEG			OTHER		
12		CUTBANK					(cm)
15		DEEP POOL			d90:		28
18					dMax:		32
20		TOTAL	100	n/a	COMPACTION:		L
24							
	7.6			WETTED WIDTH (m):	175.29		
AREA (M*M):	82.6	MARGIN (M):	10.8	CHANNEL WIDTH (m	189.14		

HABITAT COMMENTS: Stream depth/velocity/bed material transect data was collected at this site.
Site Cover % was interpreted from photos. 100% cobble/boulder

SKEENA WATERSHED ELECTROFISHING SITE 1999

STREAM NAME: SKEENA RIVER SITE: SK16 DATE: 99/10/13
WATERSHED CODE: 400 PHOTO: R3-12,13
SITE LOCATION: KISPIOX, 6 MILE BRIDGE
UTM: 09.582970.6126906 ACCESS: BOAT
GPS LOCATION: 582970 6126906 EFFORT: PASS 1: 776 secs
MAINSTEM or SIDECHANNEL: M PASS 2: 459 secs

SLOPE (%): 1 TEMP (C): 5 TIME: 10:30 COND: 102.7 pH: 7.92
TURBIDITY: CLEAR cm
SAMPLING COMMENTS: 1 rb fry present within 1st meter from shore, chinook within first 4 meters of site.

POPULATION ESTIMATES:

SPECIES	AGE	FL RANGE	FL MEAN	PASS 1	2	U1+U2	NUMBER	S.E.	N/M*M	N/100M	MEAN WT	BIOMASS g/m*m
Rbt	0+	35	35.0	1	0	1	1.0	0.0	0.013	0.118	0.40	0.005
Rbt	1+	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Rbt	>1+	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Chinook	all	48-60	53.9	10	3	13	14.3	2.2	0.179	1.681	-	-
Coho	all	66	66.0	1	0	1	1.0	0.0	0.013	0.118	3.50	0.044
Char	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
LNC	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
MW	all	39	39.0	1	0	1	1.0	0.0	0.013	0.118	-	-
Other	all	100	-	1	0	1	1.0	0.0	0.013	0.118	-	-
TOTAL							18.3		0.230	215.1		0.049

SITE LOCATION	WETTED WIDTH (m)	SITE COVER (%)			SITE WATER TYPE (%)		MEAN DEPTH (cm)
0	10.6	LOD			POOL		
3	8.8	BOULDER	100		RIFFLE	20	
6	8.7	IN VEG			RUN	70	
9		OVER VEG			OTHER	10	
12		CUTBANK					(cm)
15		DEEP POOL			d90:		25
18					dMax:		30
20		TOTAL	100	40	COMPACTION:		L
24							
	9.4			WETTED WIDTH (m):	137		
AREA (M*M):	79.6	MARGIN (M):	8.5	CHANNEL WIDTH (m	224		

HABITAT COMMENTS: Stream depth/velocity/bed material transect data was collected at this site.

SKEENA WATERSHED ELECTROFISHING SITE 1999

STREAM NAME:	SKEENA RIVER	SITE:	SK17	DATE:	99/10/13	
WATERSHED CODE:	400			PHOTO:		
SITE LOCATION:	D/S BULKLEY RIVER (12 KM)					
UTM:	09.583107.6119615	ACCESS:	BOAT			
GPS LOCATION:	583107 6119615	EFFORT:	PASS 1:	1196	secs	
MAINSTEM or SIDECHANNEL:	M		PASS 2:	600	secs	
SLOPE (%): 1	TEMP (C): 6	TIME:	14:30	COND:	102	pH: 8.2
		TURBIDITY:	CLEAR cm			

SAMPLING COMMENTS: rb fry present within 1st 1.5 m from shore, chinook within first 4.5 meters of site.

POPULATION ESTIMATES:

SPECIES	AGE	FL RANGE	FL MEAN	PASS 1	2	U1+U2	NUMBER	S.E.	N/M*M	N/100M	MEAN WT	BIOMASS g/m*m
Rbt	0+	38-49	43.9	12	3	15	16.0	1.7	0.149	1.290	0.86	0.127
Rbt	1+	65-84	76.3	3	0	3	3.0	0.0	0.028	0.242	5.10	0.142
Rbt	>1+	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Chinook	all	48-72	58.8	50	12	62	65.8	3.3	0.611	5.306	-	-
Coho	all	52	-	0	1	1	-	-	0.000	0.000	-	-
Char	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
LNC	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
MW	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Other	all	99-109	99.0	1	1	2	-	-	-	-	-	-
TOTAL							84.8		0.788	683.8		0.269

SITE LOCATION	WETTED WIDTH (m)	SITE COVER (%)			SITE WATER TYPE (%)		MEAN DEPTH (cm)
0	7.4	LOD			POOL		
3	9.3	BOULDER	100		RIFFLE		
6	9.3	IN VEG			RUN	90	
9		OVER VEG			OTHER	10	
12		CUTBANK					(cm)
15		DEEP POOL			d90:		30
18					dMax:		40
20		TOTAL	100	40	COMPACTION:		L
24							
	8.7			WETTED WIDTH (m):	178		
AREA (M*M):	107.6	MARGIN (M):	12.4	CHANNEL WIDTH (m	201		

HABITAT COMMENTS: Stream depth/velocity/bed material transect data was collected at this site.

SKEENA WATERSHED ELECTROFISHING SITE 1999

STREAM NAME:	SKEENA RIVER			SITE:	SK18	DATE:	99/10/12		
WATERSHED CODE:	400					PHOTO:	R3-7		
SITE LOCATION:	UPSTREAM KITWANGA #1								
UTM:	09.568345.6105933			ACCESS:	HELICOPTER				
GPS LOCATION:	568345 6105933			EFFORT:	PASS 1:	520	secs		
MAINSTEM or SIDECHANNEL:	M				PASS 2:	520	secs		
SLOPE (%):	0.5	TEMP (C):	4	TIME:	10:00	COND:	98	pH:	7.9
				TURBIDITY:	-	cm			

SAMPLING COMMENTS: rb fry in est. 2x4 m + 4x4 m span; fish evenly dist. throughout site. Rainbow parr in deeper sites.

POPULATION ESTIMATES:

SPECIES	AGE	FL RANGE	FL MEAN	PASS 1	2	U1+U2	NUMBER	S.E.	N/M*M	N/100M	MEAN WT	BIOMASS g/m*m
Rbt	0+	37-42	40.3	1	2	3	-	-	#VALUE!	#VALUE!	1.13	-
Rbt	1+	84	84.0	0	1	1	-	-	0.000	0.000	7.40	-
Rbt	>1+	115-136	125.5	2	0	2	2.0	0.0	0.043	0.194	19.90	0.855
Chinook	all	53-85	67.7	22	2	24	24.2	0.5	0.520	2.347	-	-
Coho	all	56-75	61.7	6	0	6	6.0	0.0	0.129	0.582	3.78	0.487
Char	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
LNC	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
MW	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Other	all	98	-	1	0	1	1.0	0.0	0.021	0.097	-	-
TOTAL							33.2		#VALUE!	322.0		1.343

SITE LOCATION	WETTED WIDTH (m)			SITE COVER (%)		SITE WATER TYPE (%)	MEAN DEPTH (cm)
0	4.4	LOD			POOL		
3	5.4	BOULDER	100		RIFFLE		
6	3.8	IN VEG			RUN	95	
9		OVER VEG			OTHER	5	
12		CUTBANK					(cm)
15		DEEP POOL			d90:		35
18					dMax:		45
20		TOTAL	100	60	COMPACTION:		L
24							
	4.5			WETTED WIDTH (m):	300		
AREA (M*M):	46.5	MARGIN (M):	10.3	CHANNEL WIDTH (m	350		

HABITAT COMMENTS: Stream depth/velocity/bed material transect data was collected at this site.

SKEENA WATERSHED ELECTROFISHING SITE 1999

STREAM NAME: SKEENA RIVER SITE: SK19 DATE: 99/10/12
WATERSHED CODE: 400 PHOTO: R3-8,9
SITE LOCATION: DOWNSTREAM KITWANGA #2
UTM: 09.531412.6103676 ACCESS: HELICOPTER
GPS LOCATION: 531412 6103676 EFFORT: PASS 1: 385 secs
MAINSTEM or SIDECHANNEL: M PASS 2: 373 secs

SLOPE (%): 0.5 TEMP (C): 4 TIME: 12:00 COND: 93 pH: 7.9
TURBIDITY: CLEAR cm
SAMPLING COMMENTS: No RB, chinook captured throughout site.

POPULATION ESTIMATES:

SPECIES	AGE	FL RANGE	FL MEAN	PASS 1	2	U1+U2	NUMBER	S.E.	N/M*M	N/100M	MEAN WT	BIOMASS g/m*m
Rbt	0+	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Rbt	1+	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Rbt	>1+	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Chinook	all	48-91	71.4	21	9	30	36.8	7.2	0.879	6.271	-	-
Coho	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Char	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
LNC	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
MW	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Other	all	103	-	1	0	1	1.0	0.0	0.024	0.171	-	-
TOTAL							37.8		0.903	644.2		0.000

SITE LOCATION	WETTED WIDTH (m)			SITE COVER (%)		SITE WATER TYPE (%)	MEAN DEPTH (cm)
0	7.0	LOD			POOL		
3	8.0	BOULDER	100		RIFFLE		
6	6.4	IN VEG			RUN	99	
9		OVER VEG			OTHER	1	
12		CUTBANK					(cm)
15		DEEP POOL			d90:		60
18					dMax:		75
20		TOTAL	100	50	COMPACTION:		L
24							
	7.1			WETTED WIDTH (m):	130		
AREA (M*M):	41.8	MARGIN (M):	5.9	CHANNEL WIDTH (m	230		

HABITAT COMMENTS: Stream depth/velocity/bed material transect data was collected at this site.

SKEENA WATERSHED ELECTROFISHING SITE 1999

STREAM NAME:	SKEENA RIVER	SITE:	SK20	DATE:	99/10/12		
WATERSHED CODE:	400			PHOTO:	R3-10,11		
SITE LOCATION:	INSECT CREEK						
UTM:	09.541678.6094049	ACCESS:	HELICOPTER				
GPS LOCATION:	541678 6094049	EFFORT:	PASS 1:	821	secs		
MAINSTEM or SIDECHANNEL:	M		PASS 2:	452	secs		
SLOPE (%):	1	TEMP (C):	4	TIME:	15:30	COND:	99
				pH:	7.79		
		TURBIDITY:	CLEAR cm				

SAMPLING COMMENTS: Fry throught, but primarily < 4-m from shore.

POPULATION ESTIMATES:

SPECIES	AGE	FL RANGE	FL MEAN	PASS 1	2	U1+U2	NUMBER	S.E.	N/M*M	N/100M	MEAN WT	BIOMASS g/m*m
Rbt	0+	39	39.0	1	0	1	1.0	0.0	0.009	0.071	0.80	0.007
Rbt	1+	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Rbt	>1+	147	147.0	1	0	1	1.0	0.0	0.009	0.071	42.00	0.392
Chinook	all	48-95	72.5	61	10	71	73.0	2.0	0.680	5.197	-	-
Coho	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Char	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
LNC	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
MW	all	-	-	0	0	0	0.0	0.0	0.000	0.000	-	-
Other	all	110	-	1	0	1	1.0	0.0	0.009	0.071	-	-
TOTAL							76.0		0.708	541.0		0.399

SITE LOCATION	WETTED WIDTH (m)			SITE COVER (%)		SITE WATER TYPE (%)	MEAN DEPTH (cm)
0	6.5	LOD			POOL		
3	8.6	BOULDER	100		RIFFLE	5	
6	7.8	IN VEG			RUN	90	
9		OVER VEG			OTHER	5	
12		CUTBANK					(cm)
15		DEEP POOL			d90:		50
18					dMax:		60
20		TOTAL	100	40	COMPACTION:		L
24							
	7.6			WETTED WIDTH (m):	138		
AREA (M*M):	107.3	MARGIN (M):	14.0	CHANNEL WIDTH (m	277		

HABITAT COMMENTS: Stream depth/velocity/bed material transect data was collected at this site.

7.3 Appendix 3. Kispiox River Depth Velocity Transect Data Analysis Forms.

Appendix 3. Kispiox River Depth Velocity Transect Data Analysis Forms

DEPTH/VELOCITY TRANSECT DATA ANALYSIS SPREADSHEET
(CALCULATES W.U.A. & DISCHARGE)

Spreadsheet modified by Willliamson Environemental Consulting, from one provided by Ron Ptolemy and Aquatic Resources Ltd.

This spreadsheet applies Ptolemy WUP HSI curves, February 12, 2001.

SITE **K1** **Kispiox River**
Downstream Kispiox Village

Stream:	Kispiox River	
Date:	99/09/25	
Mainstem/side-channel:	sc	
Meter:	Marsh McBirney	
Metered at*:	40%	dfb
Transect width:	8.4	m

Site length:	15.0	m
Site width:	6.6	m
Site area**:	99.0	m^2
Discharge:	0.262	m^3*s^{-1}

UTM:	09.582499.6134035	
Watershed code:	470-000000	
Site number:	K1	
Transect #:	1	

Hydraulic type:	Riffle	
Width:Mean Depth Ratio:	75.14	

Transect type:	P	
Stream width:	79	m
Number of stations:	11	

NOTES: * dfb = depth from bottom.
** at unsymmetrical sites, area is calculated from field measurements, not as site length * site width.

SITE WEIGHTED MEANS

Mean Depth:	0.1	m
Mean Velocity:	0.3	$m*s^{-1}$
Cross-sectional area :	0.9	m^2
Mean Probability (Fry):	62.8	%
Mean Probability (Parr):	33.3	%

ADJUSTED USABLE AREAS

Usable Width for Fry:	5.3	m
%Transect Usable by Fry	62.8	%
Usable Area for Fry	62.1	m^2
Usable Width Parr:	2.8	m
%Transect Usable by Parr	33.3	%
Usable Area for Parr	32.9	m^2

This spread sheet is designed for depth/velocity transect data collected within a closed electrofishing site.

DEPTH/ VELOCITY DATA FOR WEIGHTED USABLE AREA (WUA) CALCULATIONS

TRANSECT DATA			Cell	Cell	Cell	Cell	Usable	Cell	Usable	Cell	Cell
Station (m)	Depth (m)	Velocity (m/s)	Width (m)	Mean Depth (m)	Mean Velocity ($m*s^{-1}$)	Prob. Fry	Width Fry (m)	Prob. Parr	Width Parr (m)	Area (m^2)	Discharge (m^3*s^{-1})
0.00	0.00	0.00	0.20	0.020	0.010	0.38	0.1	0.00	0.00	0.004	0.00004
0.40	0.04	0.02	0.45	0.040	0.020	0.65	0.3	0.01	0.00	0.018	0.00036
0.90	0.05	0.02	0.55	0.050	0.020	0.70	0.4	0.01	0.01	0.028	0.00055
1.50	0.02	0.01	0.95	0.020	0.010	0.38	0.4	0.00	0.00	0.019	0.00019
2.80	0.04	0.09	1.00	0.040	0.090	0.93	0.9	0.05	0.05	0.040	0.00360
3.50	0.07	0.34	0.75	0.070	0.340	0.54	0.4	0.20	0.15	0.053	0.01785
4.30	0.17	0.25	0.85	0.170	0.250	0.86	0.7	0.65	0.55	0.145	0.03613
5.20	0.15	0.27	1.00	0.150	0.270	0.80	0.8	0.55	0.55	0.150	0.04050
6.30	0.18	0.08	0.95	0.180	0.080	1.00	1.0	0.31	0.29	0.171	0.01368
7.10	0.18	0.44	1.05	0.180	0.440	0.25	0.3	0.68	0.71	0.189	0.08316
8.40	0.20	0.62	0.65	0.190	0.530	0.13	0.1	0.73	0.47	0.124	0.06546
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000

DEPTH/VELOCITY TRANSECT DATA ANALYSIS SPREADSHEET
(CALCULATES W.U.A. & DISCHARGE)

Spreadsheet modified by Willliamson Environemental Consulting, from one provided by Ron Ptolemy and Aquatic Resources Ltd.

This spreadsheet applies Ptolemy WUP HSI curves, February 12, 2001.

SITE K2 Kispiox River Potato Patch

Stream:	Kispiox	
Date:	99/09/17	
Mainstem/side-channel:	M	
Meter:	Marsh McBirney	
Metered at*:	40%	dfb
Transect width:	6.4	m

Site length:	15.1	m
Site width:	5.4	m
Site area**:	81.5	m^2
Discharge:	0.104	m^3*s^{-1}

UTM:	09.626245.6064169	
Watershed code:	470-000000	
Site number:	K2	
Transect #:	1	

Hydraulic type:	Run	
Width:Mean Depth Ratio:	37.63	

Transect type:	P	
Stream width:	5.4	m
Number of stations:	14	

NOTES: * dfb = depth from bottom.

** at unsymmetrical sites, area is calculated from field measurements, not as site length * site width.

SITE WEIGHTED MEANS

Mean Depth:	0.2	m
Mean Velocity:	0.1	$m*s^{-1}$
Cross-sectional area :	1.1	m^2
Mean Probability (Fry):	82.0	%
Mean Probability (Parr):	31.2	%

ADJUSTED USABLE AREAS

Usable Width for Fry:	5.2	m
%Transect Usable by Fry	82.0	%
Usable Area for Fry	66.9	m^2
Usable Width Parr:	2.0	m
%Transect Usable by Parr	31.2	%
Usable Area for Parr	25.5	m^2

This spread sheet is designed for depth/velocity transect data collected within a closed electrofishing site.

DEPTH/ VELOCITY DATA FOR WEIGHTED USABLE AREA (WUA) CALCULATIONS

TRANSECT DATA Station (m)	Depth (m)	Velocity (m/s)	Cell Width (m)	Cell Mean Depth (m)	Cell Mean Velocity ($m*s^{-1}$)	Cell Prob. Fry	Usable Width Fry (m)	Cell Prob. Parr	Usable Width Parr (m)	Cell Area (m^2)	Cell Discharge (m^3*s^{-1})
0.00	0.28	0.02	0.25	0.270	0.035	0.76	0.2	0.17	0.04	0.068	0.00236
0.50	0.26	0.05	0.50	0.260	0.050	0.88	0.4	0.28	0.14	0.130	0.00650
1.00	0.28	0.08	0.50	0.280	0.080	0.92	0.5	0.44	0.22	0.140	0.01120
1.50	0.25	0.14	0.50	0.250	0.140	1.00	0.5	0.65	0.32	0.125	0.01750
2.00	0.24	0.07	0.50	0.240	0.070	1.00	0.5	0.35	0.18	0.120	0.00840
2.50	0.23	0.12	0.60	0.230	0.120	1.00	0.6	0.54	0.33	0.138	0.01656
3.20	0.19	0.18	0.50	0.190	0.180	1.00	0.5	0.61	0.31	0.095	0.01710
3.50	0.14	0.11	0.40	0.140	0.110	1.00	0.4	0.31	0.12	0.056	0.00616
4.00	0.12	0.14	0.50	0.120	0.140	1.00	0.5	0.30	0.15	0.060	0.00840
4.50	0.14	0.11	0.50	0.140	0.110	1.00	0.5	0.31	0.15	0.070	0.00770
5.00	0.09	0.05	0.50	0.090	0.050	0.90	0.5	0.08	0.04	0.045	0.00225
5.50	0.04		0.50	0.040	0.000	0.19	0.1	0.00	0.00	0.020	0.00000
6.00	0.04		0.45	0.040	0.000	0.19	0.1	0.00	0.00	0.018	0.00000
6.40	0.00		0.20	0.020	0.000	0.15	0.0	0.00	0.00	0.004	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000

DEPTH/VELOCITY TRANSECT DATA ANALYSIS SPREADSHEET
(CALCULATES W.U.A. & DISCHARGE)

Spreadsheet modified by Willliamson Environemental Consulting, from one provided by Ron Ptolemy and Aquatic Resources Ltd.

This spreadsheet applies Ptolemy WUP HSI curves, February 12, 2001.

SITE K3 Kispiox River Rodeo Grounds

Stream:	Kispiox River	
Date:	99/09/25	
Mainstem/side-channel:	M	
Meter:	Marsh McBirney	
Metered at*:	40%	dfb
Transect width:	5.5	m

UTM:	09.581165.61.44143
Watershed code:	470-000000
Site number:	K3
Transect #:	1

Hydraulic type:	Riffle
Width:Mean Depth Ratio:	41.04

Site length:	16.5	m
Site width:	6.2	m
Site area**:	102.3	m^2
Discharge:	0.272	m^3*s^{-1}

Transect type:	p	
Stream width:	66	m
Number of stations:	9	

NOTES: * dfb = depth from bottom.

** at unsymmetrical sites, area is calculated from field measurements, not as site length * site width.

SITE WEIGHTED MEANS

Mean Depth:	0.1	m
Mean Velocity:	0.4	$m*s^{-1}$
Cross-sectional area :	0.7	m^2
Mean Probability (Fry):	41.2	%
Mean Probability (Parr):	41.7	%

ADJUSTED USABLE AREAS

Usable Width for Fry:	2.3	m
%Transect Usable by Fry	41.2	%
Usable Area for Fry	42.1	m^2
Usable Width Parr:	2.3	m
%Transect Usable by Parr	41.7	%
Usable Area for Parr	42.7	m^2

This spread sheet is designed for depth/velocity transect data collected within a closed electrofishing site.

DEPTH/ VELOCITY DATA FOR WEIGHTED USABLE AREA (WUA) CALCULATIONS

TRANSECT DATA Station (m)	Depth (m)	Velocity (m/s)	Cell Width (m)	Cell Mean Depth (m)	Cell Mean Velocity ($m*s^{-1}$)	Cell Prob. Fry	Usable Width Fry (m)	Cell Prob. Parr	Usable Width Parr (m)	Cell Area (m^2)	Cell Discharge (m^3*s^{-1})
0.00	0.00	0.00	0.50	0.020	0.000	0.15	0.1	0.00	0.00	0.010	0.00000
1.00	0.04	0.00	0.80	0.040	0.000	0.19	0.1	0.00	0.00	0.032	0.00000
1.60	0.10	0.03	0.65	0.100	0.030	0.80	0.5	0.06	0.04	0.065	0.00195
2.30	0.12	0.15	0.70	0.120	0.150	1.00	0.7	0.32	0.22	0.084	0.01260
3.00	0.16	0.28	0.60	0.160	0.280	0.75	0.5	0.60	0.36	0.096	0.02688
3.50	0.16	0.43	0.55	0.160	0.430	0.27	0.1	0.60	0.33	0.088	0.03784
4.10	0.18	0.50	0.65	0.180	0.500	0.16	0.1	0.68	0.44	0.117	0.05850
4.80	0.22	0.54	0.70	0.220	0.540	0.12	0.1	0.83	0.58	0.154	0.08316
5.50	0.30	0.58	0.35	0.260	0.560	0.10	0.0	0.92	0.32	0.091	0.05096
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000

DEPTH/VELOCITY TRANSECT DATA ANALYSIS SPREADSHEET
(CALCULATES W.U.A. & DISCHARGE)

Spreadsheet modified by Willliamson Environemental Consulting, from one provided by Ron Ptolemy and Aquatic Resources Ltd.

This spreadsheet applies Ptolemy WUP HSI curves, February 12, 2001.

SITE K4 Kispiox River Upstream of the 17 mile Bridge

Stream:	Kispiox River	
Date:	99/09/15	
Mainstem/side-channel:	sc	
Meter:	Marsh McBirney	
Metered at*:	40%	dfb
Transect width:	12.5	m

UTM:	09.580298.6145373	
Watershed code:	470-000000	
Site number:	K4	
Transect #:	1	

Hydraulic type:	Run	
Width:Mean Depth Ratio:	70.50	

Site length:	14.4	m
Site width:	13.6	m
Site area**:	195.8	m^2
Discharge:	0.653	m^3*s^{-1}

Transect type:	p	
Stream width:	n/a	m
Number of stations:	28	

NOTES: * dfb = depth from bottom.

** at unsymmetrical sites, area is calculated from field measurements, not as site length * site width.

SITE WEIGHTED MEANS

Mean Depth:	0.2	m
Mean Velocity:	0.3	$m*s^{-1}$
Cross-sectional area :	2.2	m^2
Mean Probability (Fry):	71.1	%
Mean Probability (Parr):	53.8	%

ADJUSTED USABLE AREAS

Usable Width for Fry:	8.9	m
%Transect Usable by Fry	71.1	%
Usable Area for Fry	139.3	m^2
Usable Width Parr:	6.7	m
%Transect Usable by Parr	53.8	%
Usable Area for Parr	105.4	m^2

This spread sheet is designed for depth/velocity transect data collected within a closed electrofishing site.

DEPTH/ VELOCITY DATA FOR WEIGHTED USABLE AREA (WUA) CALCULATIONS

TRANSECT DATA											
Station (m)	Depth (m)	Velocity (m/s)	Cell Width (m)	Cell Mean Depth (m)	Cell Mean Velocity ($m*s^{-1}$)	Cell Prob. Fry	Usable Width Fry (m)	Cell Prob. Parr	Usable Width Parr (m)	Cell Area (m^2)	Cell Discharge (m^3*s^{-1})
	0.08	0.00	0.25	0.110	0.010	0.50	0.1	0.02	0.00	0.028	0.00028
0.50	0.14	0.02	0.50	0.140	0.020	0.70	0.4	0.06	0.03	0.070	0.00140
1.00	0.10	0.05	0.50	0.100	0.050	0.90	0.5	0.10	0.05	0.050	0.00250
1.50	0.09	0.05	0.50	0.090	0.050	0.90	0.5	0.08	0.04	0.045	0.00225
2.00	0.08	0.10	0.50	0.080	0.100	1.00	0.5	0.14	0.07	0.040	0.00400
2.50	0.12	0.13	0.50	0.120	0.130	1.00	0.5	0.28	0.14	0.060	0.00780
3.00	0.13	0.25	0.50	0.130	0.250	0.86	0.4	0.46	0.23	0.065	0.01625
3.50	0.16	0.32	0.50	0.160	0.320	0.62	0.3	0.60	0.30	0.080	0.02560
4.00	0.18	0.38	0.50	0.180	0.380	0.42	0.2	0.68	0.34	0.090	0.03420
4.50	0.20	0.38	0.50	0.200	0.380	0.42	0.2	0.75	0.38	0.100	0.03800
5.00	0.24	0.38	0.50	0.240	0.380	0.42	0.2	0.88	0.44	0.120	0.04560
5.50	0.26	0.44	0.50	0.260	0.440	0.25	0.1	0.93	0.47	0.130	0.05720
6.00	0.29	0.45	0.50	0.290	0.450	0.19	0.1	0.97	0.49	0.145	0.06525
6.50	0.26	0.48	0.50	0.260	0.480	0.18	0.1	0.93	0.47	0.130	0.06240
7.00	0.29	0.40	0.50	0.290	0.400	0.31	0.2	0.97	0.49	0.145	0.05800
7.50	0.28	0.41	0.50	0.280	0.410	0.29	0.1	0.97	0.49	0.140	0.05740
8.00	0.22	0.30	0.50	0.220	0.300	0.68	0.3	0.83	0.42	0.110	0.03300
8.50	0.16	0.30	0.38	0.160	0.300	0.68	0.3	0.60	0.23	0.060	0.01800
8.75	0.50	0.24	0.25	0.500	0.240	0.24	0.1	0.98	0.25	0.125	0.03000
9.00	0.12	0.23	0.38	0.120	0.230	0.92	0.3	0.40	0.15	0.045	0.01035
9.50	0.08	0.15	0.50	0.080	0.150	1.00	0.5	0.19	0.09	0.040	0.00600
10.00	0.08	0.17	0.50	0.080	0.170	1.00	0.5	0.20	0.10	0.040	0.00680
10.50	0.08	0.08	0.50	0.080	0.080	1.00	0.5	0.11	0.06	0.040	0.00320
11.00	0.14	0.16	0.50	0.140	0.160	1.00	0.5	0.41	0.20	0.070	0.01120
11.50	0.14	0.17	0.38	0.140	0.170	1.00	0.4	0.42	0.16	0.053	0.00893
11.75	0.15	0.24	0.25	0.150	0.240	0.88	0.2	0.54	0.13	0.038	0.00900
12.00	0.15	0.30	0.38	0.150	0.300	0.68	0.3	0.55	0.21	0.056	0.01688
12.50	0.14	0.24	0.50	0.140	0.240	0.88	0.4	0.51	0.25	0.070	0.01680
13.00	0.12	0.05	0.25	0.130	0.145	1.00	0.3	0.33	0.08	0.033	0.00471
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000

DEPTH/VELOCITY TRANSECT DATA ANALYSIS SPREADSHEET
(CALCULATES W.U.A. & DISCHARGE)

Spreadsheet modified by Willliamson Environemental Consulting, from one provided by Ron Ptolemy and Aquatic Resources Ltd.

This spreadsheet applies Ptolemy WUP HSI curves, February 12, 2001.

SITE K5 Kispiox River Upper Recreation Site

Stream:	Kispiox River	
Date:	99/09/16	
Mainstem/side-channel:	m	
Meter:	Marsh McBirney	
Metered at*:	40%	dfb
Transect width:	10.0	m

Site length:	16.1	m
Site width:	3.2	m
Site area**:	51.5	m^2
Discharge:	2.148	m^3*s^{-1}

UTM:	09.571964.6154988	
Watershed code:	470-000000	
Site number:	K5	
Transect #:	1	

Hydraulic type:	Run	
Width:Mean Depth Ratio:	20.35	

Transect type:	P	
Stream width:	76	m
Number of stations:	17	

NOTES: * dfb = depth from bottom.
** at unsymmetrical sites, area is calculated from field measurements, not as site length * site width.

SITE WEIGHTED MEANS

Mean Depth:	0.5	m
Mean Velocity:	0.4	m*s^{-1}
Cross-sectional area :	4.9	m^2
Mean Probability (Fry):	25.2	%
Mean Probability (Parr):	76.6	%

ADJUSTED USABLE AREAS

Usable Width for Fry:	2.5	m
%Transect Usable by Fry	25.2	%
Usable Area for Fry	13.0	m^2
Usable Width Parr:	7.7	m
%Transect Usable by Parr	76.6	%
Usable Area for Parr	39.4	m^2

This spread sheet is designed for depth/velocity transect data collected within a closed electrofishing site.

DEPTH/ VELOCITY DATA FOR WEIGHTED USABLE AREA (WUA) CALCULATIONS

TRANSECT DATA											
Station (m)	Depth (m)	Velocity (m/s)	Cell Width (m)	Cell Mean Depth (m)	Cell Mean Velocity (m*s^{-1})	Cell Prob. Fry	Usable Width Fry (m)	Cell Prob. Parr	Usable Width Parr (m)	Cell Area (m^2)	Cell Discharge (m^3*s^{-1})
0.00	0.00	0.00	0.25	0.040	0.000	0.19	0.0	0.00	0.00	0.010	0.00000
0.50	0.08	0.00	0.50	0.080	0.000	0.20	0.1	0.00	0.00	0.040	0.00000
1.00	0.17	0.04	0.50	0.170	0.040	0.85	0.4	0.16	0.08	0.085	0.00340
1.50	0.14	0.12	0.50	0.140	0.120	1.00	0.5	0.33	0.16	0.070	0.00840
2.00	0.20	0.08	0.50	0.200	0.080	1.00	0.5	0.34	0.17	0.100	0.00800
2.50	0.30	0.13	0.50	0.300	0.130	0.85	0.4	0.66	0.33	0.150	0.01950
3.00	0.45	0.20	0.50	0.450	0.200	0.38	0.2	0.90	0.45	0.225	0.04500
3.50	0.50	0.23	0.50	0.500	0.230	0.25	0.1	0.96	0.48	0.250	0.05750
4.00	0.57	0.25	0.50	0.570	0.250	0.14	0.1	1.00	0.50	0.285	0.07125
4.50	0.59	0.34	0.38	0.590	0.340	0.08	0.0	1.00	0.38	0.221	0.07523
4.75	0.58	0.25	0.25	0.580	0.250	0.13	0.0	1.00	0.25	0.145	0.03625
5.00	0.65	0.33	0.63	0.650	0.330	0.06	0.0	1.00	0.63	0.406	0.13406
6.00	0.58	0.52	1.00	0.580	0.520	0.02	0.0	1.00	1.00	0.580	0.30160
7.00	0.62	0.50	1.00	0.620	0.500	0.02	0.0	1.00	1.00	0.620	0.31000
8.00	0.70	0.60	1.00	0.700	0.600	0.01	0.0	0.93	0.93	0.700	0.42000
9.00	0.66	0.64	1.00	0.660	0.640	0.00	0.0	0.87	0.87	0.660	0.42240
10.00	0.81	0.64	0.50	0.735	0.640	0.00	0.0	0.87	0.44	0.368	0.23520
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000

DEPTH/VELOCITY TRANSECT DATA ANALYSIS SPREADSHEET
(CALCULATES W.U.A. & DISCHARGE)

Spreadsheet modified by Willliamson Environemental Consulting, from one provided by Ron Ptolemy and Aquatic Resources Ltd.

This spreadsheet applies Ptolemy WUP HSI curves, February 12, 2001.

SITE K6 Kispiox River Upstream if Mitten Bridge

Stream:	Kispiox River	
Date:	99/09/16	
Mainstem/side-channel:	sc	
Meter:	Marsh McBirney	
Metered at*:	40%	dfb
Transect width:	12.5	m

UTM:	9.557820.6161078	
Watershed code:	470-000000	
Site number:	K6	
Transect #:	1	

Hydraulic type:	run	
Width:Mean Depth Ratio:	63.13	

Site length:	13.4	m
Site width:	5.1	m
Site area**:	68.3	m^2
Discharge:	0.447	m^3*s^{-1}

Transect type:	P	
Stream width:	15	m
Number of stations:	26	

NOTES: * dfb = depth from bottom.
** at unsymmetrical sites, area is calculated from field measurements, not as site length * site width.

SITE WEIGHTED MEANS

Mean Depth:	0.2	m
Mean Velocity:	0.2	$m*s^{-1}$
Cross-sectional area :	2.5	m^2
Mean Probability (Fry):	82.8	%
Mean Probability (Parr):	56.2	%

ADJUSTED USABLE AREAS

Usable Width for Fry:	10.3	m
%Transect Usable by Fry	82.8	%
Usable Area for Fry	56.6	m^2
Usable Width Parr:	7.0	m
%Transect Usable by Parr	56.2	%
Usable Area for Parr	38.4	m^2

This spread sheet is designed for depth/velocity transect data collected within a closed electrofishing site.

DEPTH/ VELOCITY DATA FOR WEIGHTED USABLE AREA (WUA) CALCULATIONS

TRANSECT DATA											
Station (m)	Depth (m)	Velocity (m/s)	Cell Width (m)	Cell Mean Depth (m)	Cell Mean Velocity ($m*s^{-1}$)	Cell Prob. Fry	Usable Width Fry (m)	Cell Prob. Parr	Usable Width Parr (m)	Cell Area (m^2)	Cell Discharge (m^3*s^{-1})
0.00	0.02	0.00	0.25	0.030	0.000	0.17	0.0	0.00	0.00	0.008	0.00000
0.50	0.04	0.00	0.50	0.040	0.000	0.19	0.1	0.00	0.00	0.020	0.00000
1.00	0.04	0.40	0.50	0.040	0.400	0.33	0.2	0.10	0.05	0.020	0.00800
1.50	0.06	0.01	0.50	0.060	0.010	0.50	0.3	0.01	0.00	0.030	0.00030
2.00	0.07	0.07	0.50	0.070	0.070	1.00	0.5	0.08	0.04	0.035	0.00245
2.50	0.10	0.01	0.50	0.100	0.010	0.50	0.3	0.02	0.01	0.050	0.00050
3.00	0.12	0.08	0.50	0.120	0.080	1.00	0.5	0.19	0.09	0.060	0.00480
3.50	0.16	0.20	0.50	0.160	0.200	1.00	0.5	0.54	0.27	0.080	0.01600
4.00	0.18	0.18	0.50	0.180	0.180	1.00	0.5	0.57	0.29	0.090	0.01620
4.50	0.21	0.11	0.50	0.210	0.110	1.00	0.5	0.47	0.24	0.105	0.01155
5.00	0.22	0.14	0.50	0.220	0.140	1.00	0.5	0.59	0.29	0.110	0.01540
5.50	0.25	0.18	0.50	0.250	0.180	1.00	0.5	0.76	0.38	0.125	0.02250
6.00	0.20	0.24	0.50	0.200	0.240	0.88	0.4	0.74	0.37	0.100	0.02400
6.50	0.21	0.26	0.50	0.210	0.260	0.82	0.4	0.80	0.40	0.105	0.02730
7.00	0.25	0.23	0.50	0.250	0.230	0.92	0.5	0.87	0.44	0.125	0.02875
7.50	0.30	0.25	0.50	0.300	0.250	0.73	0.4	0.98	0.49	0.150	0.03750
8.00	0.30	0.21	0.50	0.300	0.210	0.82	0.4	0.90	0.45	0.150	0.03150
8.50	0.28	0.22	0.50	0.280	0.220	0.86	0.4	0.91	0.46	0.140	0.03080
9.00	0.28	0.21	0.50	0.280	0.210	0.89	0.4	0.89	0.45	0.140	0.02940
9.50	0.28	0.21	0.50	0.280	0.210	0.89	0.4	0.89	0.45	0.140	0.02940
10.00	0.28	0.21	0.50	0.280	0.210	0.89	0.4	0.89	0.45	0.140	0.02940
10.50	0.28	0.20	0.50	0.280	0.200	0.92	0.5	0.87	0.44	0.140	0.02800
11.00	0.26	0.17	0.50	0.260	0.170	0.98	0.5	0.75	0.38	0.130	0.02210
11.50	0.24	0.12	0.50	0.240	0.120	1.00	0.5	0.55	0.28	0.120	0.01440
12.00	0.24	0.12	0.50	0.240	0.120	1.00	0.5	0.55	0.28	0.120	0.01440
12.50	0.10	0.01	0.25	0.170	0.065	0.95	0.2	0.21	0.05	0.043	0.00276
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000

DEPTH/VELOCITY TRANSECT DATA ANALYSIS SPREADSHEET
(CALCULATES W.U.A. & DISCHARGE)

Spreadsheet modified by Willliamson Environemental Consulting, from one provided by Ron Ptolemy and Aquatic Resources Ltd.

This spreadsheet applies Ptolemy WUP HSI curves, February 12, 2001.

SITE K7 Kispiox River at the Sweetin River Confluence

Stream:	Kispiox River	
Date:	99/09/08	
Mainstem/side-channel:	m	
Meter:	Marsh McBirney	
Metered at*:	40%	dfb
Transect width:	6.0	m

UTM:	9.545742.6169687	
Watershed code:	470-000000	
Site number:	K7	
Transect #:	1	

Hydraulic type:	Riffle	
Width:Mean Depth Ratio:	43.37	

Site length:	20.3	m
Site width:	5.2	m
Site area**:	105.6	m^2
Discharge:	0.394	m^3*s^{-1}

Transect type:	F	
Stream width:	58.3	m
Number of stations:	14	

NOTES: * dfb = depth from bottom.

** at unsymmetrical sites, area is calculated from field measurements, not as site length * site width.

SITE WEIGHTED MEANS			**ADJUSTED USABLE AREAS**		
Mean Depth:	0.1	m	Usable Width for Fry:	2.5	m
Mean Velocity:	0.5	$m*s^{-1}$	%Transect Usable by Fry	41.1	%
Cross-sectional area :	0.8	m^2	Usable Area for Fry	43.3	m^2
Mean Probability (Fry):	41.1	%	Usable Width Parr:	2.8	m
Mean Probability (Parr):	47.1	%	%Transect Usable by Parr	47.1	%
			Usable Area for Parr	49.8	m^2

This spread sheet is designed for depth/velocity transect data collected within a closed electrofishing site.

DEPTH/ VELOCITY DATA FOR WEIGHTED USABLE AREA (WUA) CALCULATIONS

TRANSECT DATA Station (m)	Depth (m)	Velocity (m/s)	Cell Width (m)	Cell Mean Depth (m)	Cell Mean Velocity ($m*s^{-1}$)	Cell Prob. Fry	Usable Width Fry (m)	Cell Prob. Parr	Usable Width Parr (m)	Cell Area (m^2)	Cell Discharge (m^3*s^{-1})
0.00	0.00	0.00	0.25	0.025	0.040	0.64	0.2	0.00	0.00	0.006	0.00025
0.50	0.05	0.08	0.50	0.050	0.080	1.00	0.5	0.06	0.03	0.025	0.00200
1.00	0.05	0.11	0.50	0.050	0.110	1.00	0.5	0.08	0.04	0.025	0.00275
1.50	0.12	0.26	0.38	0.120	0.260	0.82	0.3	0.42	0.16	0.045	0.01170
1.75	0.14	0.33	0.25	0.140	0.330	0.58	0.1	0.52	0.13	0.035	0.01155
2.00	0.14	0.46	0.38	0.140	0.460	0.21	0.1	0.52	0.20	0.053	0.02415
2.50	0.15	0.55	0.50	0.150	0.550	0.11	0.1	0.55	0.28	0.075	0.04125
3.00	0.15	0.20	0.50	0.150	0.200	1.00	0.5	0.50	0.25	0.075	0.01500
3.50	0.16	0.62	0.50	0.160	0.620	0.04	0.0	0.54	0.27	0.080	0.04960
4.00	0.16	0.62	0.50	0.160	0.620	0.04	0.0	0.54	0.27	0.080	0.04960
4.50	0.17	0.51	0.50	0.170	0.510	0.15	0.1	0.65	0.33	0.085	0.04335
5.00	0.20	0.60	0.50	0.200	0.600	0.06	0.0	0.70	0.35	0.100	0.06000
5.50	0.19	0.57	0.50	0.190	0.570	0.09	0.0	0.71	0.35	0.095	0.05415
6.00	0.22	0.54	0.25	0.205	0.555	0.11	0.0	0.75	0.19	0.051	0.02844
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000

DEPTH/VELOCITY TRANSECT DATA ANALYSIS SPREADSHEET
(CALCULATES W.U.A. & DISCHARGE)

Spreadsheet modified by Willliamson Environemental Consulting, from one provided by Ron Ptolemy and Aquatic Resources Ltd.

This spreadsheet applies Ptolemy WUP HSI curves, February 12, 2001.

SITE K8 Date Creek

Stream:	Date Creek	
Date:	99/09/17	
Mainstem/side-channel:	m	
Meter:	Marsh McBirney	
Metered at*:	40%	dfb
Transect width:	5.2	m

Site length:	16.5	m
Site width:	4.1	m
Site area**:	67.7	m^2
Discharge:	0.274	m^3*s^{-1}

UTM:	9.0266245.6064169	
Watershed code:	470-03820	
Site number:	K8	
Transect #:	1	

Hydraulic type:	riffle	
Width:Mean Depth Ratio:	40.75	

Transect type:	P	
Stream width:	12	m
Number of stations:	11	

NOTES: * dfb = depth from bottom.
** at unsymmetrical sites, area is calculated from field measurements, not as site length * site width.

SITE WEIGHTED MEANS

Mean Depth:	0.1	m
Mean Velocity:	0.4	$m*s^{-1}$
Cross-sectional area :	0.7	m^2
Mean Probability (Fry):	52.6	%
Mean Probability (Parr):	36.7	%

ADJUSTED USABLE AREAS

Usable Width for Fry:	2.7	m
%Transect Usable by Fry	52.6	%
Usable Area for Fry	35.6	m^2
Usable Width Parr:	1.9	m
%Transect Usable by Parr	36.7	%
Usable Area for Parr	24.8	m^2

This spread sheet is designed for depth/velocity transect data collected within a closed electrofishing site.

DEPTH/ VELOCITY DATA FOR WEIGHTED USABLE AREA (WUA) CALCULATIONS

TRANSECT DATA Station (m)	Depth (m)	Velocity (m/s)	Cell Width (m)	Cell Mean Depth (m)	Cell Mean Velocity ($m*s^{-1}$)	Cell Prob. Fry	Usable Width Fry (m)	Cell Prob. Parr	Usable Width Parr (m)	Cell Area (m^2)	Cell Discharge (m^3*s^{-1})
0.00	0.00	0.00	0.25	0.050	0.030	0.80	0.2	0.02	0.01	0.013	0.00038
0.50	0.10	0.06	0.75	0.100	0.060	0.95	0.7	0.12	0.09	0.075	0.00450
1.50	0.09	1.00	0.75	0.090	1.000	0.00	0.0	0.08	0.06	0.068	0.06750
2.00	0.10	0.30	0.50	0.100	0.300	0.68	0.3	0.33	0.17	0.050	0.01500
2.50	0.14	0.79	0.50	0.140	0.790	0.00	0.0	0.31	0.16	0.070	0.05530
3.00	0.16	0.28	0.50	0.160	0.280	0.75	0.4	0.60	0.30	0.080	0.02240
3.50	0.17	0.22	0.50	0.170	0.220	0.94	0.5	0.61	0.31	0.085	0.01870
4.00	0.19	0.39	0.50	0.190	0.390	0.38	0.2	0.73	0.37	0.095	0.03705
4.50	0.16	0.50	0.50	0.160	0.500	0.16	0.1	0.60	0.30	0.080	0.04000
5.00	0.11	0.25	0.35	0.110	0.250	0.86	0.3	0.38	0.13	0.039	0.00963
5.20	0.09	0.37	0.10	0.100	0.310	0.65	0.1	0.33	0.03	0.010	0.00310
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000

DEPTH/VELOCITY TRANSECT DATA ANALYSIS SPREADSHEET
(CALCULATES W.U.A. & DISCHARGE)

Spreadsheet modified by Willliamson Environemental Consulting, from one provided by Ron Ptolemy and Aquatic Resources Ltd.

This spreadsheet applies Ptolemy WUP HSI curves, February 12, 2001.

SITE K9 McCully Creek

Stream:	McCully Creek	
Date:	99/09/13	
Mainstem/side-channel:	sc	
Meter:	Marsh McBirney	
Metered at*:	40%	dfb
Transect width:	4.9	m

UTM:	9.576706.6149508	
Watershed code:	470-155700	
Site number:	K9	
Transect #:	1	

Hydraulic type:	run	
Width:Mean Depth Ratio:	61.21	

Site length:	12.5	m
Site width:	4.5	m
Site area**:	56.3	m^2
Discharge:	0.128	m^3*s^{-1}

Transect type:	F	
Stream width:	17.5	m
Number of stations:	8	

NOTES: * dfb = depth from bottom.
** at unsymmetrical sites, area is calculated from field measurements, not as site length * site width.

SITE WEIGHTED MEANS

Mean Depth:	0.1	m
Mean Velocity:	0.3	$m*s^{-1}$
Cross-sectional area :	0.4	m^2
Mean Probability (Fry):	41.3	%
Mean Probability (Parr):	22.1	%

ADJUSTED USABLE AREAS

Usable Width for Fry:	2.0	m
%Transect Usable by Fry	41.3	%
Usable Area for Fry	23.2	m^2
Usable Width Parr:	1.1	m
%Transect Usable by Parr	22.1	%
Usable Area for Parr	12.4	m^2

This spread sheet is designed for depth/velocity transect data collected within a closed electrofishing site.

DEPTH/ VELOCITY DATA FOR WEIGHTED USABLE AREA (WUA) CALCULATIONS

TRANSECT DATA Station (m)	Depth (m)	Velocity (m/s)	Cell Width (m)	Cell Mean Depth (m)	Cell Mean Velocity ($m*s^{-1}$)	Cell Prob. Fry	Usable Width Fry (m)	Cell Prob. Parr	Usable Width Parr (m)	Cell Area (m^2)	Cell Discharge (m^3*s^{-1})
0.00	0.09	0.26	0.25	0.095	0.275	0.80	0.2	0.28	0.07	0.024	0.00653
0.50	0.10	0.29	0.50	0.100	0.290	0.72	0.4	0.33	0.17	0.050	0.01450
1.00	0.10	0.32	0.65	0.100	0.320	0.62	0.4	0.33	0.21	0.065	0.02080
1.80	0.05	0.00	1.10	0.050	0.000	0.20	0.2	0.00	0.00	0.055	0.00000
3.20	0.05	0.35	1.05	0.050	0.350	0.52	0.5	0.13	0.14	0.053	0.01838
3.90	0.10	0.48	0.75	0.100	0.480	0.18	0.1	0.33	0.25	0.075	0.03600
4.70	0.12	0.48	0.50	0.120	0.480	0.18	0.1	0.42	0.21	0.060	0.02880
4.90	0.10	0.12	0.10	0.110	0.300	0.68	0.1	0.38	0.04	0.011	0.00330
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000

DEPTH/VELOCITY TRANSECT DATA ANALYSIS SPREADSHEET
(CALCULATES W.U.A. & DISCHARGE)

Spreadsheet modified by Willliamson Environemental Consulting, from one provided by Ron Ptolemy and Aquatic Resources Ltd.

This spreadsheet applies Ptolemy WUP HSI curves, February 12, 2001.

SITE K10 McCully Creek Upper

Stream:	Kispiox River	
Date:	99/09/13	
Mainstem/side-channel:	m	
Meter:	Marsh McBirney	
Metered at*:	40%	dfb
Transect width:	5.2	m

Site length:	40.5	m
Site width:	5.6	m
Site area**:	226.8	m^2
Discharge:	0.092	m^3*s^{-1}

UTM:	9.572660.6149039	
Watershed code:	470-155700	
Site number:	K10	
Transect #:	1	

Hydraulic type:	Run	
Width:Mean Depth Ratio:	42.02	

Transect type:	F	
Stream width:	17.06	m
Number of stations:	12	

NOTES: * dfb = depth from bottom.
** at unsymmetrical sites, area is calculated from field measurements, not as site length * site width.

SITE WEIGHTED MEANS

Mean Depth:	0.1	m
Mean Velocity:	0.1	m*s^{-1}
Cross-sectional area :	0.6	m^2
Mean Probability (Fry):	76.3	%
Mean Probability (Parr):	31.4	%

ADJUSTED USABLE AREAS

Usable Width for Fry:	4.0	m
%Transect Usable by Fry	76.3	%
Usable Area for Fry	173.2	m^2
Usable Width Parr:	1.6	m
%Transect Usable by Parr	31.4	%
Usable Area for Parr	71.3	m^2

This spread sheet is designed for depth/velocity transect data collected within a closed electrofishing site.

DEPTH/ VELOCITY DATA FOR WEIGHTED USABLE AREA (WUA) CALCULATIONS

TRANSECT DATA Station (m)	Depth (m)	Velocity (m/s)	Cell Width (m)	Cell Mean Depth (m)	Cell Mean Velocity (m*s^{-1})	Cell Prob. Fry	Usable Width Fry (m)	Cell Prob. Parr	Usable Width Parr (m)	Cell Area (m^2)	Cell Discharge (m^3*s^{-1})
0.00	0.00	0.00	0.25	0.010	0.000	0.10	0.0	0.00	0.00	0.003	0.00000
0.50	0.02	0.00	0.50	0.020	0.000	0.15	0.1	0.00	0.00	0.010	0.00000
1.00	0.02	0.00	0.50	0.020	0.000	0.15	0.1	0.00	0.00	0.010	0.00000
1.50	0.10	0.03	0.50	0.100	0.030	0.80	0.4	0.06	0.03	0.050	0.00150
2.00	0.12	0.06	0.50	0.120	0.060	0.95	0.5	0.15	0.07	0.060	0.00360
2.50	0.14	0.09	0.50	0.140	0.090	1.00	0.5	0.26	0.13	0.070	0.00630
3.00	0.18	0.15	0.50	0.180	0.150	1.00	0.5	0.51	0.26	0.090	0.01350
3.50	0.16	0.22	0.50	0.160	0.220	0.94	0.5	0.56	0.28	0.080	0.01760
4.00	0.18	0.19	0.50	0.180	0.190	1.00	0.5	0.59	0.30	0.090	0.01710
4.50	0.18	0.20	0.50	0.180	0.200	1.00	0.5	0.61	0.31	0.090	0.01800
5.00	0.20	0.17	0.35	0.200	0.170	1.00	0.4	0.61	0.21	0.070	0.01190
5.20	0.22	0.07	0.10	0.210	0.120	1.00	0.1	0.50	0.05	0.021	0.00252
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000

DEPTH/VELOCITY TRANSECT DATA ANALYSIS SPREADSHEET
(CALCULATES W.U.A. & DISCHARGE)

Spreadsheet modified by Willliamson Environemental Consulting, from one provided by Ron Ptolemy and Aquatic Resources Ltd.

This spreadsheet applies Ptolemy WUP HSI curves, February 12, 2001.

SITE K11 Cullon Creek

Stream:	Cullon Creek	
Date:	99/09/15	
Mainstem/side-channel:	sc	
Meter:	Marsh McBirney	
Metered at*:	40%	dfb
Transect width:	5.5	m

UTM:	9.569316.6158445
Watershed code:	470-245700
Site number:	K11
Transect #:	1

Site length:	14.5	m
Site width:	5.0	m
Site area**:	72.5	m^2
Discharge:	0.161	$m^3 * s^{-1}$

Hydraulic type:	riffle
Width:Mean Depth Ratio:	58.74

Transect type:	P	
Stream width:	7.08	m
Number of stations:	12	

NOTES:
* dfb = depth from bottom.
** at unsymmetrical sites, area is calculated from field measurements, not as site length * site width.

SITE WEIGHTED MEANS

Mean Depth:	0.1	m
Mean Velocity:	0.3	$m*s^{-1}$
Cross-sectional area :	0.5	m^2
Mean Probability (Fry):	64.5	%
Mean Probability (Parr):	30.0	%

ADJUSTED USABLE AREAS

Usable Width for Fry:	3.5	m
%Transect Usable by Fry	64.5	%
Usable Area for Fry	46.8	m^2
Usable Width Parr:	1.6	m
%Transect Usable by Parr	30.0	%
Usable Area for Parr	21.7	m^2

This spread sheet is designed for depth/velocity transect data collected within a closed electrofishing site.

DEPTH/ VELOCITY DATA FOR WEIGHTED USABLE AREA (WUA) CALCULATIONS

TRANSECT DATA Station (m)	Depth (m)	Velocity (m/s)	Cell Width (m)	Cell Mean Depth (m)	Cell Mean Velocity ($m*s^{-1}$)	Cell Prob. Fry	Usable Width Fry (m)	Cell Prob. Parr	Usable Width Parr (m)	Cell Area (m^2)	Cell Discharge (m^3*s^{-1})
0.00	0.06	0.01	0.25	0.070	0.150	1.00	0.3	0.15	0.04	0.018	0.00263
0.50	0.08	0.29	0.50	0.080	0.290	0.72	0.4	0.25	0.13	0.040	0.01160
1.00	0.10	0.42	0.50	0.100	0.420	0.30	0.2	0.33	0.17	0.050	0.02100
1.50	0.10	0.34	0.50	0.100	0.340	0.54	0.3	0.33	0.17	0.050	0.01700
2.00	0.12	0.33	0.50	0.120	0.330	0.58	0.3	0.42	0.21	0.060	0.01980
2.50	0.12	0.31	0.50	0.120	0.310	0.65	0.3	0.42	0.21	0.060	0.01860
3.00	0.10	0.23	0.50	0.100	0.230	0.92	0.5	0.32	0.16	0.050	0.01150
3.50	0.10	0.26	0.50	0.100	0.260	0.82	0.4	0.33	0.17	0.050	0.01300
4.00	0.10	0.37	0.50	0.100	0.370	0.44	0.2	0.33	0.17	0.050	0.01850
4.50	0.06	0.21	0.50	0.060	0.210	0.97	0.5	0.15	0.07	0.030	0.00630
5.00	0.08	0.36	0.50	0.080	0.360	0.48	0.2	0.25	0.13	0.040	0.01440
5.50	0.06	0.44	0.25	0.070	0.400	0.35	0.1	0.20	0.05	0.018	0.00700
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000

DEPTH/VELOCITY TRANSECT DATA ANALYSIS SPREADSHEET
(CALCULATES W.U.A. & DISCHARGE)

Spreadsheet modified by Willliamson Environemental Consulting, from one provided by Ron Ptolemy and Aquatic Resources Ltd.

This spreadsheet applies Ptolemy WUP HSI curves, February 12, 2001.

SITE K12 Upper Cullon Creek

Stream:	Cullon Creek	
Date:	99/09/21	
Mainstem/side-channel:	sc	
Meter:	Marsh McBirney	
Metered at*:	40%	dfb
Transect width:	3.0	m

Site length:	25.1	m
Site width:	2.5	m
Site area**:	62.8	m^2
Discharge:	0.029	m^3*s^{-1}

UTM:	9.568198.6160080	
Watershed code:	470-245700	
Site number:	K12	
Transect #:	1	

Hydraulic type:	riffle/run	
Width:Mean Depth Ratio:	24.08	

Transect type:	F	
Stream width:	n/a	m
Number of stations:	7	

NOTES: * dfb = depth from bottom.
** at unsymmetrical sites, area is calculated from field measurements, not as site length * site width.

SITE WEIGHTED MEANS

Mean Depth:	0.1	m
Mean Velocity:	0.1	m*s^{-1}
Cross-sectional area :	0.4	m^2
Mean Probability (Fry):	78.7	%
Mean Probability (Parr):	18.2	%

ADJUSTED USABLE AREAS

Usable Width for Fry:	2.4	m
%Transect Usable by Fry	78.7	%
Usable Area for Fry	49.4	m^2
Usable Width Parr:	0.5	m
%Transect Usable by Parr	18.2	%
Usable Area for Parr	11.4	m^2

This spread sheet is designed for depth/velocity transect data collected within a closed electrofishing site.

DEPTH/ VELOCITY DATA FOR WEIGHTED USABLE AREA (WUA) CALCULATIONS

TRANSECT DATA Station (m)	Depth (m)	Velocity (m/s)	Cell Width (m)	Cell Mean Depth (m)	Cell Mean Velocity (m*s^{-1})	Cell Prob. Fry	Usable Width Fry (m)	Cell Prob. Parr	Usable Width Parr (m)	Cell Area (m^2)	Cell Discharge (m^3*s^{-1})
0.00	0.02	0.00	0.25	0.070	0.000	0.20	0.1	0.00	0.00	0.018	0.00000
0.50	0.12	0.00	0.50	0.120	0.000	0.20	0.1	0.00	0.00	0.060	0.00000
1.00	0.18	0.09	0.50	0.180	0.090	1.00	0.5	0.34	0.17	0.090	0.00810
1.50	0.19	0.10	0.50	0.190	0.100	1.00	0.5	0.40	0.20	0.095	0.00950
2.00	0.13	0.06	0.50	0.130	0.060	0.95	0.5	0.16	0.08	0.065	0.00390
2.50	0.06	0.14	0.50	0.060	0.140	1.00	0.5	0.11	0.06	0.030	0.00420
3.00	0.07	0.30	0.25	0.065	0.220	0.94	0.2	0.15	0.04	0.016	0.00358
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000

DEPTH/VELOCITY TRANSECT DATA ANALYSIS SPREADSHEET
(CALCULATES W.U.A. & DISCHARGE)

Spreadsheet modified by Willliamson Environemental Consulting, from one provided by Ron Ptolemy and Aquatic Resources Ltd.

This spreadsheet applies Ptolemy WUP HSI curves, February 12, 2001.

SITE K13 Ironside Creek

Stream:	Ironside Creek	
Date:	99/09/16	
Mainstem/side-channel:	m	
Meter:	Marsh McBirney	
Metered at*:	40%	dfb
Transect width:	5.0	m

UTM:	9.0626245.6064169	
Watershed code:	470-335400	
Site number:	K13	
Transect #:	1	

Hydraulic type:	Riffle	
Width:Mean Depth Ratio:	30.63	

Site length:	14.0	m
Site width:	3.0	m
Site area**:	42.0	m^2
Discharge:	0.418	m^3*s^{-1}

Transect type:	P	
Stream width:	9	m
Number of stations:	11	

NOTES: * dfb = depth from bottom.

** at unsymmetrical sites, area is calculated from field measurements, not as site length * site width.

SITE WEIGHTED MEANS

Mean Depth:	0.2	m
Mean Velocity:	0.5	$m*s^{-1}$
Cross-sectional area :	0.8	m^2
Mean Probability (Fry):	58.8	%
Mean Probability (Parr):	37.4	%

ADJUSTED USABLE AREAS

Usable Width for Fry:	2.9	m
%Transect Usable by Fry	58.8	%
Usable Area for Fry	24.7	m^2
Usable Width Parr:	1.9	m
%Transect Usable by Parr	37.4	%
Usable Area for Parr	15.7	m^2

This spread sheet is designed for depth/velocity transect data collected within a closed electrofishing site.

DEPTH/ VELOCITY DATA FOR WEIGHTED USABLE AREA (WUA) CALCULATIONS

TRANSECT DATA											
Station (m)	Depth (m)	Velocity (m/s)	Cell Width (m)	Cell Mean Depth (m)	Cell Mean Velocity ($m*s^{-1}$)	Cell Prob. Fry	Usable Width Fry (m)	Cell Prob. Parr	Usable Width Parr (m)	Cell Area (m^2)	Cell Discharge (m^3*s^{-1})
0.00	0.06	0.01	0.25	0.095	0.040	0.85	0.2	0.07	0.02	0.024	0.00095
0.50	0.13	0.07	0.50	0.130	0.070	1.00	0.5	0.18	0.09	0.065	0.00455
1.00	0.16	0.35	0.50	0.160	0.350	0.52	0.3	0.60	0.30	0.080	0.02800
1.50	0.14	0.28	0.50	0.140	0.280	0.75	0.4	0.52	0.26	0.070	0.01960
2.00	0.12	0.19	0.50	0.120	0.190	1.00	0.5	0.37	0.18	0.060	0.01140
2.50	0.08	0.27	0.50	0.080	0.270	0.80	0.4	0.25	0.13	0.040	0.01080
3.00	0.07	0.39	0.50	0.070	0.390	0.38	0.2	0.20	0.10	0.035	0.01365
3.50	0.08	0.14	0.50	0.080	0.140	1.00	0.5	0.18	0.09	0.040	0.00560
4.00	0.28	0.87	0.50	0.280	0.870	0.00	0.0	0.46	0.23	0.140	0.12180
4.50	0.36	0.76	0.50	0.360	0.760	0.00	0.0	0.66	0.33	0.180	0.13680
5.00	0.30	0.82	0.25	0.330	0.790	0.00	0.0	0.59	0.15	0.083	0.06518
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000

DEPTH/VELOCITY TRANSECT DATA ANALYSIS SPREADSHEET
(CALCULATES W.U.A. & DISCHARGE)

Spreadsheet modified by Willliamson Environemental Consulting, from one provided by Ron Ptolemy and Aquatic Resources Ltd.

This spreadsheet applies Ptolemy WUP HSI curves, February 12, 2001.

SITE K14 Kispiox River at Corral Creek "S" Bend

Stream:	Kispiox River	
Date:	99/09/25	
Mainstem/side-channel:	sc	
Meter:	Marsh McBirney	
Metered at*:	40%	dfb
Transect width:	3.3	m
Site length:	17.8	m
Site width:	3.5	m
Site area**:	62.3	m^2
Discharge:	0.127	$m^3 * s^{-1}$

UTM:	9.549777.6168182	
Watershed code:	470-000000	
Site number:	K14	
Transect #:	1	
Hydraulic type:	Riffle/Glide	
Width:Mean Depth Ratio:	32.60	
Transect type:	T	
Stream width:	81.8	m
Number of stations:	16	

NOTES: * dfb = depth from bottom.

** at unsymmetrical sites, area is calculated from field measurements, not as site length * site width.

SITE WEIGHTED MEANS

Mean Depth:	0.1	m
Mean Velocity:	0.4	$m * s^{-1}$
Cross-sectional area :	0.3	m^2
Mean Probability (Fry):	49.2	%
Mean Probability (Parr):	32.0	%

ADJUSTED USABLE AREAS

Usable Width for Fry:	1.6	m
%Transect Usable by Fry	49.2	%
Usable Area for Fry	30.6	m^2
Usable Width Parr:	1.1	m
%Transect Usable by Parr	32.0	%
Usable Area for Parr	19.9	m^2

This spread sheet is designed for depth/velocity transect data collected within a closed electrofishing site.

DEPTH/ VELOCITY DATA FOR WEIGHTED USABLE AREA (WUA) CALCULATIONS

TRANSECT DATA											
Station (m)	Depth (m)	Velocity (m/s)	Cell Width (m)	Cell Mean Depth (m)	Cell Mean Velocity ($m * s^{-1}$)	Cell Prob. Fry	Usable Width Fry (m)	Cell Prob. Parr	Usable Width Parr (m)	Cell Area (m^2)	Cell Discharge ($m^3 * s^{-1}$)
1.40	0.00	0.00	0.15	0.020	0.030	0.60	0.1	0.00	0.00	0.003	0.00009
1.70	0.04	0.06	0.30	0.040	0.060	0.88	0.3	0.04	0.01	0.012	0.00072
2.00	0.06	0.28	0.25	0.060	0.280	0.75	0.2	0.16	0.04	0.015	0.00420
2.20	0.07	0.35	0.20	0.070	0.350	0.52	0.1	0.20	0.04	0.014	0.00490
2.40	0.08	0.49	0.20	0.080	0.490	0.17	0.0	0.25	0.05	0.016	0.00784
2.60	0.12	0.49	0.20	0.120	0.490	0.17	0.0	0.42	0.08	0.024	0.01176
2.80	0.14	0.53	0.20	0.140	0.530	0.13	0.0	0.52	0.10	0.028	0.01484
3.00	0.14	0.51	0.20	0.140	0.510	0.15	0.0	0.52	0.10	0.028	0.01428
3.20	0.14	0.48	0.20	0.140	0.480	0.18	0.0	0.52	0.10	0.028	0.01344
3.40	0.14	0.54	0.20	0.140	0.540	0.12	0.0	0.52	0.10	0.028	0.01512
3.60	0.16	0.46	0.20	0.160	0.460	0.21	0.0	0.60	0.12	0.032	0.01472
3.80	0.16	0.38	0.20	0.160	0.380	0.42	0.1	0.60	0.12	0.032	0.01216
4.00	0.14	0.31	0.20	0.140	0.310	0.65	0.1	0.52	0.10	0.028	0.00868
4.20	0.12	0.14	0.15	0.120	0.140	1.00	0.2	0.30	0.04	0.018	0.00252
4.30	0.08	0.06	0.25	0.080	0.060	0.95	0.2	0.09	0.02	0.020	0.00120
4.70	0.00	0.00	0.20	0.040	0.030	0.74	0.1	0.02	0.00	0.008	0.00024
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000

DEPTH/VELOCITY TRANSECT DATA ANALYSIS SPREADSHEET
(CALCULATES W.U.A. & DISCHARGE)

Spreadsheet modified by Willliamson Environemental Consulting, from one provided by Ron Ptolemy and Aquatic Resources Ltd.

This spreadsheet applies Ptolemy WUP HSI curves, February 12, 2001.

SITE K15 Clifford Creek

Stream:	Clifford Creek	
Date:	99/09/16	
Mainstem/side-channel:	m	
Meter:	Marsh McBirney	
Metered at*:	40%	dfb
Transect width:	3.0	m

UTM:	9.626245.6064169	
Watershed code:	470-434800	
Site number:	K15	
Transect #:	1	

Hydraulic type:	Riffle/Pool	
Width:Mean Depth Ratio:	18.65	

Site length:	12.6	m
Site width:	3.5	m
Site area**:	44.1	m^2
Discharge:	0.181	m^3*s^{-1}

Transect type:	P	
Stream width:	10.5	m
Number of stations:	7	

NOTES: * dfb = depth from bottom.
** at unsymmetrical sites, area is calculated from field measurements, not as site length * site width.

SITE WEIGHTED MEANS		
Mean Depth:	0.2	m
Mean Velocity:	0.4	$m*s^{-1}$
Cross-sectional area :	0.5	m^2
Mean Probability (Fry):	37.9	%
Mean Probability (Parr):	22.4	%

ADJUSTED USABLE AREAS		
Usable Width for Fry:	1.1	m
%Transect Usable by Fry	37.9	%
Usable Area for Fry	16.7	m^2
Usable Width Parr:	0.7	m
%Transect Usable by Parr	22.4	%
Usable Area for Parr	9.9	m^2

This spread sheet is designed for depth/velocity transect data collected within a closed electrofishing site.

DEPTH/ VELOCITY DATA FOR WEIGHTED USABLE AREA (WUA) CALCULATIONS

TRANSECT DATA Station (m)	Depth (m)	Velocity (m/s)	Cell Width (m)	Cell Mean Depth (m)	Cell Mean Velocity ($m*s^{-1}$)	Cell Prob. Fry	Usable Width Fry (m)	Cell Prob. Parr	Usable Width Parr (m)	Cell Area (m^2)	Cell Discharge (m^3*s^{-1})
0.00	0.04	0.00	0.25	0.060	0.000	0.20	0.1	0.00	0.00	0.015	0.00000
0.50	0.08	0.00	0.50	0.080	0.000	0.20	0.1	0.00	0.00	0.040	0.00000
1.00	0.16	1.10	0.50	0.160	1.100	0.00	0.0	0.10	0.05	0.080	0.08800
1.50	0.14	0.05	0.50	0.140	0.050	0.90	0.5	0.16	0.08	0.070	0.00350
2.00	0.30	0.57	0.50	0.300	0.570	0.08	0.0	0.95	0.48	0.150	0.08550
2.50	0.18	0.01	0.50	0.180	0.010	0.50	0.3	0.03	0.02	0.090	0.00090
3.00	0.12	0.13	0.25	0.150	0.070	1.00	0.3	0.22	0.06	0.038	0.00263
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000

DEPTH/VELOCITY TRANSECT DATA ANALYSIS SPREADSHEET
(CALCULATES W.U.A. & DISCHARGE)

Spreadsheet modified by Willliamson Environemental Consulting, from one provided by Ron Ptolemy and Aquatic Resources Ltd.

This spreadsheet applies Ptolemy WUP HSI curves, February 12, 2001.

SITE K16 Sweetin River

Stream:	Sweetin River	
Date:	99/09/08	
Mainstem/side-channel:	m	
Meter:	Marsh McBirney	
Metered at*:	40%	dfb
Transect width:	5.0	m

Site length:	9.4	m
Site width:	2.9	m
Site area**:	27.3	m^2
Discharge:	0.208	$m^3{*}s^{-1}$

UTM:	9.626245.6064169	
Watershed code:	470-507200	
Site number:	K16	
Transect #:	1	

Hydraulic type:	Riffle	
Width:Mean Depth Ratio:	35.97	

Transect type:	T	
Stream width:	28.8	m
Number of stations:	11	

NOTES: * dfb = depth from bottom.
** at unsymmetrical sites, area is calculated from field measurements, not as site length * site width.

SITE WEIGHTED MEANS

Mean Depth:	0.1	m
Mean Velocity:	0.3	$m{*}s^{-1}$
Cross-sectional area :	0.7	m^2
Mean Probability (Fry):	64.3	%
Mean Probability (Parr):	44.4	%

ADJUSTED USABLE AREAS

Usable Width for Fry:	3.2	m
%Transect Usable by Fry	64.3	%
Usable Area for Fry	17.5	m^2
Usable Width Parr:	2.2	m
%Transect Usable by Parr	44.4	%
Usable Area for Parr	12.1	m^2

This spread sheet is designed for depth/velocity transect data collected within a closed electrofishing site.

DEPTH/ VELOCITY DATA FOR WEIGHTED USABLE AREA (WUA) CALCULATIONS

TRANSECT DATA											
Station (m)	Depth (m)	Velocity (m/s)	Cell Width (m)	Cell Mean Depth (m)	Cell Mean Velocity ($m{*}s^{-1}$)	Cell Prob. Fry	Usable Width Fry (m)	Cell Prob. Parr	Usable Width Parr (m)	Cell Area (m^2)	Cell Discharge ($m^3{*}s^{-1}$)
0.00	0.00	0.00	0.25	0.030	0.045	0.72	0.2	0.01	0.00	0.008	0.00034
0.50	0.06	0.09	0.50	0.060	0.090	1.00	0.5	0.08	0.04	0.030	0.00270
1.00	0.10	0.06	0.50	0.100	0.060	0.95	0.5	0.12	0.06	0.050	0.00300
1.50	0.15	0.52	0.50	0.150	0.520	0.14	0.1	0.55	0.28	0.075	0.03900
2.00	0.12	0.08	0.50	0.120	0.080	1.00	0.5	0.19	0.09	0.060	0.00480
2.50	0.10	0.42	0.50	0.100	0.420	0.30	0.2	0.33	0.17	0.050	0.02100
3.00	0.17	0.35	0.50	0.170	0.350	0.52	0.3	0.65	0.33	0.085	0.02975
3.50	0.21	0.24	0.50	0.210	0.235	0.92	0.5	0.77	0.38	0.105	0.02468
4.00	0.18	0.33	0.50	0.180	0.330	0.58	0.3	0.68	0.34	0.090	0.02970
4.50	0.20	0.36	0.50	0.200	0.360	0.48	0.2	0.75	0.38	0.100	0.03600
5.00	0.14	0.44	0.25	0.170	0.400	0.35	0.1	0.65	0.16	0.043	0.01700
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000

DEPTH/VELOCITY TRANSECT DATA ANALYSIS SPREADSHEET
(CALCULATES W.U.A. & DISCHARGE)

Spreadsheet modified by Willliamson Environemental Consulting, from one provided by Ron Ptolemy and Aquatic Resources Ltd.

This spreadsheet applies Ptolemy WUP HSI curves, February 12, 2001.

SITE K17 Nangeese River Site #1

Stream:	Nangeese River	
Date:	99/09/17	
Mainstem/side-channel:	m	
Meter:	Marsh McBirney	
Metered at*:	40%	dfb
Transect width:	9.5	m

UTM:		0
Watershed code:	470-000000	
Site number:	K17	
Transect #:	1	

Hydraulic type:	Run	
Width:Mean Depth Ratio:	28.03	

Site length:	24.2	m
Site width:	2.9	m
Site area**:	70.2	m^2
Discharge:	1.756	m^3*s^{-1}

Transect type:	P	
Stream width:	12.75	m
Number of stations:	20	

NOTES: * dfb = depth from bottom.

** at unsymmetrical sites, area is calculated from field measurements, not as site length * site width.

SITE WEIGHTED MEANS

Mean Depth:	0.3	m
Mean Velocity:	0.5	$m*s^{-1}$
Cross-sectional area :	3.2	m^2
Mean Probability (Fry):	22.2	%
Mean Probability (Parr):	79.0	%

ADJUSTED USABLE AREAS

Usable Width for Fry:	2.1	m
%Transect Usable by Fry	22.2	%
Usable Area for Fry	15.6	m^2
Usable Width Parr:	7.5	m
%Transect Usable by Parr	79.0	%
Usable Area for Parr	55.4	m^2

This spread sheet is designed for depth/velocity transect data collected within a closed electrofishing site.

DEPTH/ VELOCITY DATA FOR WEIGHTED USABLE AREA (WUA) CALCULATIONS

TRANSECT DATA Station (m)	Depth (m)	Velocity (m/s)	Cell Width (m)	Cell Mean Depth (m)	Cell Mean Velocity ($m*s^{-1}$)	Cell Prob. Fry	Usable Width Fry (m)	Cell Prob. Parr	Usable Width Parr (m)	Cell Area (m^2)	Cell Discharge (m^3*s^{-1})
0.00	0.02	0.00	0.25	0.110	0.085	1.00	0.3	0.17	0.04	0.028	0.00234
0.50	0.20	0.17	0.50	0.200	0.170	1.00	0.5	0.61	0.30	0.100	0.01700
1.00	0.33	0.12	0.50	0.330	0.120	0.75	0.4	0.62	0.31	0.165	0.01980
1.50	0.36	0.24	0.50	0.360	0.240	0.57	0.3	0.98	0.49	0.180	0.04320
2.00	0.31	0.25	0.50	0.310	0.250	0.71	0.4	0.98	0.49	0.155	0.03875
2.50	0.35	0.48	0.50	0.350	0.480	0.12	0.1	1.00	0.50	0.175	0.08400
3.00	0.37	0.65	0.50	0.370	0.650	0.01	0.0	0.85	0.43	0.185	0.12025
3.50	0.45	0.71	0.50	0.450	0.710	0.00	0.0	0.74	0.37	0.225	0.15975
4.00	0.38	0.75	0.50	0.380	0.750	0.00	0.0	0.68	0.34	0.190	0.14250
4.50	0.37	0.74	0.50	0.370	0.740	0.00	0.0	0.70	0.35	0.185	0.13690
5.00	0.40	0.62	0.50	0.400	0.620	0.02	0.0	0.90	0.45	0.200	0.12400
5.50	0.46	0.81	0.50	0.460	0.810	0.00	0.0	0.57	0.29	0.230	0.18630
6.00	0.46	0.53	0.50	0.460	0.530	0.05	0.0	1.00	0.50	0.230	0.12190
6.50	0.42	0.63	0.50	0.420	0.630	0.01	0.0	0.88	0.44	0.210	0.13230
7.00	0.48	0.55	0.50	0.480	0.550	0.03	0.0	1.00	0.50	0.240	0.13200
7.50	0.34	0.53	0.50	0.340	0.530	0.09	0.0	0.99	0.50	0.170	0.09010
8.00	0.22	0.60	0.50	0.220	0.600	0.06	0.0	0.77	0.39	0.110	0.06600
8.50	0.22	0.68	0.50	0.220	0.680	0.00	0.0	0.66	0.33	0.110	0.07480
9.00	0.18	0.52	0.50	0.180	0.520	0.14	0.1	0.68	0.34	0.090	0.04680
9.50	0.16	0.31	0.25	0.170	0.415	0.32	0.1	0.60	0.15	0.043	0.01764
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000

DEPTH/VELOCITY TRANSECT DATA ANALYSIS SPREADSHEET
(CALCULATES W.U.A. & DISCHARGE)

Spreadsheet modified by Willliamson Environemental Consulting, from one provided by Ron Ptolemy and Aquatic Resources Ltd.

This spreadsheet applies Ptolemy WUP HSI curves, February 12, 2001.

SITE K18 Nangeese River Site #2

Stream:	Nangeese River	
Date:	99/09/17	
Mainstem/side-channel:	m	
Meter:	Marsh McBirney	
Metered at*:	40%	dfb
Transect width:	15.0	m

UTM:	9.541480.6173332
Watershed code:	470-544600
Site number:	K18
Transect #:	1

Hydraulic type:	Run
Width:Mean Depth Ratio:	45.89

Site length:	12.3	m
Site width:	7.3	m
Site area**:	89.4	m^2
Discharge:	1.397	m^3*s^{-1}

Transect type:	T	
Stream width:	15.6	m
Number of stations:	30	

NOTES: * dfb = depth from bottom.

** at unsymmetrical sites, area is calculated from field measurements, not as site length * site width.

SITE WEIGHTED MEANS

Mean Depth:	0.3	m
Mean Velocity:	0.3	$m*s^{-1}$
Cross-sectional area :	4.9	m^2
Mean Probability (Fry):	34.8	%
Mean Probability (Parr):	57.5	%

ADJUSTED USABLE AREAS

Usable Width for Fry:	5.2	m	
%Transect Usable by Fry	34.8	%	
Usable Area for Fry	31.1	m^2	31.12467
Usable Width Parr:	8.6	m	
%Transect Usable by Parr	57.5	%	
Usable Area for Parr	51.4	m^2	

This spread sheet is designed for depth/velocity transect data collected within a closed electrofishing site.

DEPTH/ VELOCITY DATA FOR WEIGHTED USABLE AREA (WUA) CALCULATIONS

TRANSECT DATA											
Station (m)	Depth (m)	Velocity (m/s)	Cell Width (m)	Cell Mean Depth (m)	Cell Mean Velocity ($m*s^{-1}$)	Cell Prob. Fry	Usable Width Fry (m)	Cell Prob. Parr	Usable Width Parr (m)	Cell Area (m^2)	Cell Discharge (m^3*s^{-1})
0.00	0.00	0.00	0.25	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
0.50	0.00	0.00	0.50	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
1.00	0.02	0.00	0.50	0.020	0.000	0.15	0.1	0.00	0.00	0.010	0.00000
1.50	0.07	0.12	0.50	0.070	0.120	1.00	0.5	0.13	0.06	0.035	0.00420
2.00	0.05	0.23	0.50	0.050	0.230	0.92	0.5	0.12	0.06	0.025	0.00575
2.50	0.05	0.19	0.50	0.050	0.190	1.00	0.5	0.11	0.06	0.025	0.00475
3.00	0.04	0.09	0.50	0.040	0.090	0.93	0.5	0.05	0.03	0.020	0.00180
3.50	0.07	0.21	0.50	0.070	0.210	0.97	0.5	0.18	0.09	0.035	0.00735
4.00	0.10	0.27	0.50	0.100	0.270	0.80	0.4	0.33	0.17	0.050	0.01350
4.50	0.16	0.35	0.50	0.160	0.350	0.52	0.3	0.60	0.30	0.080	0.02800
5.00	0.16	0.39	0.50	0.160	0.390	0.38	0.2	0.60	0.30	0.080	0.03120
5.50	0.16	0.34	0.50	0.160	0.340	0.54	0.3	0.60	0.30	0.080	0.02720
6.00	0.14	0.41	0.50	0.140	0.410	0.32	0.2	0.52	0.26	0.070	0.02870
6.50	0.17	0.43	0.50	0.170	0.430	0.27	0.1	0.65	0.33	0.085	0.03655
7.00	0.19	0.44	0.50	0.190	0.440	0.25	0.1	0.73	0.37	0.095	0.04180
7.50	0.23	0.44	0.50	0.230	0.440	0.25	0.1	0.86	0.43	0.115	0.05060
8.00	0.25	0.48	0.50	0.250	0.480	0.18	0.1	0.91	0.46	0.125	0.06000
8.50	0.30	0.39	0.50	0.300	0.390	0.32	0.2	0.98	0.49	0.150	0.05850
9.00	0.34	0.32	0.50	0.340	0.320	0.45	0.2	0.99	0.50	0.170	0.05440
9.50	0.46	0.36	0.50	0.460	0.360	0.17	0.1	1.00	0.50	0.230	0.08280
10.00	0.48	0.38	0.50	0.480	0.380	0.13	0.1	1.00	0.50	0.240	0.09120
10.50	0.58	0.35	0.50	0.580	0.350	0.08	0.0	1.00	0.50	0.290	0.10150
11.00	0.66	0.35	0.50	0.660	0.350	0.05	0.0	1.00	0.50	0.330	0.11550
11.50	0.69	0.35	0.50	0.690	0.350	0.05	0.0	1.00	0.50	0.345	0.12075
12.00	0.70	0.28	0.50	0.700	0.280	0.08	0.0	1.00	0.50	0.350	0.09800
12.50	0.86	0.38	0.50	0.860	0.380	0.04	0.0	1.00	0.50	0.430	0.16340
13.00	0.82	0.28	0.50	0.820	0.280	0.08	0.0	1.00	0.50	0.410	0.11480
13.50	0.77	0.10	0.50	0.770	0.100	0.10	0.1	0.55	0.28	0.385	0.03850
14.00	0.58	0.03	0.75	0.580	0.030	0.12	0.1	0.18	0.14	0.435	0.01305
15.00	0.25	0.00	0.50	0.415	0.015	0.24	0.1	0.05	0.03	0.208	0.00311
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000

7.4 Appendix 4. Skeena River Depth Velocity Transect Data Analysis Forms.

Appendix 4. Kispiox River Depth Velocity Transect Data Analysis Forms.

DEPTH/VELOCITY TRANSECT DATA ANALYSIS SPREADSHEET
(CALCULATES W.U.A. & DISCHARGE)

This spreadsheet applies Ptolemy WUP HSI curves, February 12, 2001.

SITE SK1 Skeena River 14 km Upstream of Kluatantan River

Stream:	Skeena	
Date:	99/09/22	
Mainstem/side-channel:	m	
Meter:	Marsh McBirney	
Metered at*:	40%	dfb
Transect width:	15.0	m

Site length:	15.8	m
Site width:	14.8	m
Site area**:	233.8	m^2
Discharge:	0.079	m^3*s^{-1}

UTM:	09.542327.6307930	
Watershed code:	400	
Site number:	SK1	
Transect #:	1	

Hydraulic type:	run
Width:Mean Depth Ratio:	286.62

Transect type:	P	
Stream width:	59.3	m
Number of stations:	31	

NOTES: * dfb = depth from bottom.
** at unsymmetrical sites, area is calculated from field measurements, not as site length * site width.

SITE WEIGHTED MEANS

Mean Depth:	0.1	m
Mean Velocity:	0.1	m*s^{-1}
Cross-sectional area :	0.8	m^2
Mean Probability (Fry):	54.5	%
Mean Probability (Parr):	7.6	%

ADJUSTED USABLE AREAS

Usable Width for Fry:	8.2	m
%Transect Usable by Fry	54.5	%
Usable Area for Fry	127.4	m^2
Usable Width Parr:	1.1	m
%Transect Usable by Parr	7.6	%
Usable Area for Parr	17.9	m^2

This spread sheet is designed for depth/velocity transect data collected within a closed electrofishing site.

DEPTH/ VELOCITY DATA FOR WEIGHTED USABLE AREA (WUA) CALCULATIONS

TRANSECT DATA			Cell Width (m)	Cell Mean Depth (m)	Cell Mean Velocity (m*s^{-1})	Cell Prob. Fry	Usable Width Fry (m)	Cell Prob. Parr	Usable Width Parr (m)	Cell Area (m^2)	Cell Discharge (m^3*s^{-1})
Station (m)	Depth (m)	Velocity (m/s)									
0.00	0.04	0.01	0.25	0.050	0.030	0.80	0.2	0.02	0.01	0.013	0.00038
0.50	0.06	0.05	0.50	0.060	0.050	0.90	0.5	0.05	0.02	0.030	0.00150
1.00	0.06	0.21	0.50	0.060	0.210	0.97	0.5	0.15	0.07	0.030	0.00630
1.50	0.03	0.00	0.50	0.030	0.000	0.17	0.1	0.00	0.00	0.015	0.00000
2.00	0.07	0.09	0.50	0.070	0.090	1.00	0.5	0.10	0.05	0.035	0.00315
2.50	0.00	0.00	0.50	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
3.00	0.12	0.13	0.50	0.120	0.130	1.00	0.5	0.28	0.14	0.060	0.00780
3.50	0.10	0.12	0.50	0.100	0.120	1.00	0.5	0.21	0.10	0.050	0.00600
4.00	0.10	0.15	0.50	0.100	0.150	1.00	0.5	0.25	0.12	0.050	0.00750
4.50	0.12	0.33	0.50	0.120	0.330	0.58	0.3	0.42	0.21	0.060	0.01980
5.00	0.14	0.05	0.50	0.140	0.050	0.90	0.5	0.16	0.08	0.070	0.00350
5.50	0.14	0.06	0.50	0.140	0.060	0.95	0.5	0.18	0.09	0.070	0.00420
6.00	0.00	0.00	0.50	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
6.50	0.03	0.03	0.50	0.030	0.030	0.68	0.3	0.01	0.00	0.015	0.00045
7.00	0.00	0.00	0.50	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
7.50	0.00	0.00	0.50	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
8.00	0.06	0.02	0.50	0.060	0.020	0.70	0.4	0.02	0.01	0.030	0.00060
8.50	0.04	0.01	0.50	0.040	0.010	0.47	0.2	0.01	0.00	0.020	0.00020
9.00	0.10	0.05	0.50	0.100	0.050	0.90	0.5	0.10	0.05	0.050	0.00250
9.50	0.08	0.02	0.50	0.080	0.020	0.70	0.4	0.03	0.01	0.040	0.00080
10.00	0.02	0.00	0.50	0.020	0.000	0.15	0.1	0.00	0.00	0.010	0.00000
10.50	0.04	0.14	0.50	0.040	0.140	0.93	0.5	0.07	0.04	0.020	0.00280
11.00	0.04	0.07	0.50	0.040	0.070	0.93	0.5	0.04	0.02	0.020	0.00140
11.50	0.02	0.00	0.50	0.020	0.000	0.15	0.1	0.00	0.00	0.010	0.00000
12.00	0.00	0.00	0.50	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
12.50	0.02	0.00	0.50	0.020	0.000	0.15	0.1	0.00	0.00	0.010	0.00000
13.00	0.02	0.00	0.50	0.020	0.000	0.15	0.1	0.00	0.00	0.010	0.00000
13.50	0.02	0.00	0.50	0.020	0.000	0.15	0.1	0.00	0.00	0.010	0.00000
14.00	0.07	0.26	0.50	0.070	0.260	0.82	0.4	0.20	0.10	0.035	0.00910
14.50	0.02	0.00	0.50	0.020	0.000	0.15	0.1	0.00	0.00	0.010	0.00000
15.00	0.08	0.10	0.25	0.050	0.050	0.90	0.2	0.04	0.01	0.013	0.00063
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000

DEPTH/VELOCITY TRANSECT DATA ANALYSIS SPREADSHEET
(CALCULATES W.U.A. & DISCHARGE)

Spreadsheet modified by Willliamson Environemental Consulting, from one provided by Ron Ptolemy and Aquatic Resources Ltd.

This spreadsheet applies Ptolemy WUP HSI curves, February 12, 2001.

SITE SK2 Skeena River at Kluatantan Confluence

Stream:	Skeena	
Date:	9/22/1999	
Mainstem/side-channel:	m	
Meter:	Marsh McBirney	
Metered at*:	40%	dfb
Transect width:	8.5	m

Site length:	16.5	m
Site width:	7.0	m
Site area**:	115.5	m^2
Discharge:	0.530	m^3*s^{-1}

UTM:	9.552239.6298261	
Watershed code:	400	
Site number:	SK2	
Transect #:	1	

Hydraulic type:	run	
Width:Mean Depth Ratio:	36.58	

Transect type:	P	
Stream width:	82.7	m
Number of stations:	18	

NOTES: * dfb = depth from bottom.
** at unsymmetrical sites, area is calculated from field measurements, not as site length * site width.

SITE WEIGHTED MEANS

Mean Depth:	0.2	m
Mean Velocity:	0.3	m*s^{-1}
Cross-sectional area :	2.0	m^2
Mean Probability (Fry):	64.9	%
Mean Probability (Parr):	59.9	%

ADJUSTED USABLE AREAS

Usable Width for Fry:	5.5	m
%Transect Usable by Fry	64.9	%
Usable Area for Fry	74.9	m^2
Usable Width Parr:	5.1	m
%Transect Usable by Parr	59.9	%
Usable Area for Parr	69.2	m^2

This spread sheet is designed for depth/velocity transect data collected within a closed electrofishing site.

DEPTH/ VELOCITY DATA FOR WEIGHTED USABLE AREA (WUA) CALCULATIONS

TRANSECT DATA Station (m)	Depth (m)	Velocity (m/s)	Cell Width (m)	Cell Mean Depth (m)	Cell Mean Velocity (m*s^{-1})	Cell Prob. Fry	Usable Width Fry (m)	Cell Prob. Parr	Usable Width Parr (m)	Cell Area (m^2)	Cell Discharge (m^3*s^{-1})
0.00	0.05	0.00	0.25	0.065	0.020	0.70	0.2	0.02	0.00	0.016	0.00033
0.50	0.08	0.04	0.50	0.080	0.040	0.85	0.4	0.06	0.03	0.040	0.00160
1.00	0.12	0.05	0.50	0.120	0.050	0.90	0.5	0.13	0.06	0.060	0.00300
1.50	0.14	0.06	0.50	0.140	0.060	0.95	0.5	0.18	0.09	0.070	0.00420
2.00	0.18	0.09	0.50	0.180	0.090	1.00	0.5	0.34	0.17	0.090	0.00810
2.50	0.20	0.08	0.50	0.200	0.080	1.00	0.5	0.34	0.17	0.100	0.00800
3.00	0.08	0.15	0.50	0.080	0.150	1.00	0.5	0.19	0.09	0.040	0.00600
3.50	0.20	0.02	0.50	0.200	0.020	0.70	0.4	0.08	0.04	0.100	0.00200
4.00	0.16	0.27	0.50	0.160	0.270	0.80	0.4	0.60	0.30	0.080	0.02160
4.50	0.25	0.23	0.50	0.250	0.230	0.92	0.5	0.87	0.44	0.125	0.02875
5.00	0.30	0.35	0.50	0.300	0.350	0.44	0.2	0.98	0.49	0.150	0.05250
5.50	0.34	0.31	0.50	0.340	0.310	0.47	0.2	0.99	0.50	0.170	0.05270
6.00	0.32	0.39	0.50	0.320	0.390	0.30	0.1	0.98	0.49	0.160	0.06240
6.50	0.30	0.42	0.50	0.300	0.420	0.26	0.1	0.98	0.49	0.150	0.06300
7.00	0.33	0.32	0.50	0.330	0.320	0.47	0.2	0.99	0.50	0.165	0.05280
7.50	0.28	0.45	0.50	0.280	0.450	0.20	0.1	0.97	0.49	0.140	0.06300
8.00	0.42	0.31	0.50	0.420	0.310	0.30	0.1	1.00	0.50	0.210	0.06510
8.50	0.45	0.34	0.25	0.435	0.325	0.27	0.1	1.00	0.25	0.109	0.03534
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000

DEPTH/VELOCITY TRANSECT DATA ANALYSIS SPREADSHEET
(CALCULATES W.U.A. & DISCHARGE)

Spreadsheet modified by Willliamson Environemental Consulting, from one provided by Ron Ptolemy and Aquatic Resources Ltd.

This spreadsheet applies Ptolemy WUP HSI curves, February 12, 2001.

SITE SK3 Skeena River 22 km downstream of Kluatantan River

Stream:	Skeena	
Date:	99/09/22	
Mainstem/side-channel:	m	
Meter:	Marsh McBirney	
Metered at*:	40%	dfb
Transect width:	15.0	m

Site length:	10.6	m
Site width:	11.7	m
Site area**:	123.0	m^2
Discharge:	0.785	m^3*s^{-1}

UTM:	9.570516.6285868	
Watershed code:	400	
Site number:	SK3	
Transect #:	1	

Hydraulic type:	Riffle	
Width:Mean Depth Ratio:	91.05	

Transect type:	P	
Stream width:	99	m
Number of stations:	26	

NOTES: * dfb = depth from bottom.

** at unsymmetrical sites, area is calculated from field measurements, not as site length * site width.

SITE WEIGHTED MEANS

Mean Depth:	0.2	m
Mean Velocity:	0.3	$m*s^{-1}$
Cross-sectional area :	2.5	m^2
Mean Probability (Fry):	69.2	%
Mean Probability (Parr):	55.9	%

ADJUSTED USABLE AREAS

Usable Width for Fry:	10.4	m
%Transect Usable by Fry	69.2	%
Usable Area for Fry	85.1	m^2
Usable Width Parr:	8.4	m
%Transect Usable by Parr	55.9	%
Usable Area for Parr	68.8	m^2

This spread sheet is designed for depth/velocity transect data collected within a closed electrofishing site.

DEPTH/ VELOCITY DATA FOR WEIGHTED USABLE AREA (WUA) CALCULATIONS

TRANSECT DATA											
Station (m)	Depth (m)	Velocity (m/s)	Cell Width (m)	Cell Mean Depth (m)	Cell Mean Velocity ($m*s^{-1}$)	Cell Prob. Fry	Usable Width Fry (m)	Cell Prob. Parr	Usable Width Parr (m)	Cell Area (m^2)	Cell Discharge (m^3*s^{-1})
0.00	0.07	0.16	0.25	0.065	0.180	1.00	0.3	0.13	0.03	0.016	0.00293
0.50	0.06	0.20	0.50	0.060	0.200	1.00	0.5	0.14	0.07	0.030	0.00600
1.00	0.07	0.08	0.50	0.070	0.080	1.00	0.5	0.09	0.05	0.035	0.00280
1.50	0.07	0.15	0.50	0.070	0.150	1.00	0.5	0.15	0.08	0.035	0.00525
2.00	0.09	0.10	0.50	0.090	0.100	1.00	0.5	0.15	0.08	0.045	0.00450
2.50	0.03	0.28	0.50	0.030	0.280	0.64	0.3	0.05	0.03	0.015	0.00420
3.00	0.10	0.22	0.50	0.100	0.220	0.94	0.5	0.31	0.16	0.050	0.01100
3.50	0.14	0.22	0.50	0.140	0.220	0.94	0.5	0.49	0.24	0.070	0.01540
4.00	0.16	0.23	0.50	0.160	0.230	0.92	0.5	0.58	0.29	0.080	0.01840
4.50	0.16	0.17	0.50	0.160	0.170	1.00	0.5	0.49	0.24	0.080	0.01360
5.00	0.14	0.17	0.50	0.140	0.170	1.00	0.5	0.42	0.21	0.070	0.01190
5.50	0.14	0.15	0.50	0.140	0.150	1.00	0.5	0.39	0.20	0.070	0.01050
6.00	0.15	0.18	0.50	0.150	0.180	1.00	0.5	0.46	0.23	0.075	0.01350
6.50	0.11	0.14	0.50	0.110	0.140	1.00	0.5	0.27	0.13	0.055	0.00770
7.00	0.17	0.28	0.50	0.170	0.280	0.75	0.4	0.65	0.33	0.085	0.02380
7.50	0.14	0.30	0.63	0.140	0.300	0.68	0.4	0.52	0.33	0.088	0.02625
8.25	0.18	0.22	0.75	0.180	0.220	0.94	0.7	0.64	0.48	0.135	0.02970
9.00	0.22	0.26	1.13	0.220	0.260	0.82	0.9	0.83	0.93	0.248	0.06435
10.50	0.28	0.45	1.00	0.280	0.450	0.20	0.2	0.97	0.97	0.280	0.12600
11.00	0.25	0.22	0.50	0.250	0.220	0.94	0.5	0.86	0.43	0.125	0.02750
11.50	0.24	0.43	0.50	0.240	0.430	0.27	0.1	0.88	0.44	0.120	0.05160
12.00	0.24	0.45	0.50	0.240	0.450	0.22	0.1	0.88	0.44	0.120	0.05400
12.50	0.12	0.50	0.50	0.120	0.500	0.16	0.1	0.42	0.21	0.060	0.03000
13.00	0.20	0.50	0.75	0.200	0.500	0.16	0.1	0.75	0.56	0.150	0.07500
14.00	0.22	0.47	1.00	0.220	0.470	0.19	0.2	0.83	0.83	0.220	0.10340
15.00	0.24	0.33	0.50	0.230	0.400	0.35	0.2	0.83	0.42	0.115	0.04600
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000

DEPTH/VELOCITY TRANSECT DATA ANALYSIS SPREADSHEET
(CALCULATES W.U.A. & DISCHARGE)

Spreadsheet modified by Willliamson Environemental Consulting, from one provided by Ron Ptolemy and Aquatic Resources Ltd.

This spreadsheet applies Ptolemy WUP HSI curves, February 12, 2001.

SITE SK4 Skeena River 43.7 km downstream of Kluatantan River

Stream:	Skeena	
Date:	99/09/22	
Mainstem/side-channel:	m	
Meter:	Marsh McBirney	
Metered at*:	40%	dfb
Transect width:	15.0	m

UTM:	9.58541.6269719	
Watershed code:	400	
Site number:	SK4	
Transect #:	1	

Hydraulic type:	run	
Width:Mean Depth Ratio:	45.52	

Site length:	20.7	m
Site width:	3.5	m
Site area**:	72.6	m^2
Discharge:	2.033	$m^3 * s^{-1}$

Transect type:	P	
Stream width:	65	m
Number of stations:	20	

NOTES: * dfb = depth from bottom.
** at unsymmetrical sites, area is calculated from field measurements, not as site length * site width.

SITE WEIGHTED MEANS		
Mean Depth:	0.3	m
Mean Velocity:	0.4	$m*s^{-1}$
Cross-sectional area :	4.9	m^2
Mean Probability (Fry):	32.3	%
Mean Probability (Parr):	87.9	%

ADJUSTED USABLE AREAS		
Usable Width for Fry:	4.9	m
%Transect Usable by Fry	32.3	%
Usable Area for Fry	23.5	m^2
Usable Width Parr:	13.2	m
%Transect Usable by Parr	87.9	%
Usable Area for Parr	63.8	m^2

This spread sheet is designed for depth/velocity transect data collected within a closed electrofishing site.

DEPTH/ VELOCITY DATA FOR WEIGHTED USABLE AREA (WUA) CALCULATIONS

TRANSECT DATA Station (m)	Depth (m)	Velocity (m/s)	Cell Width (m)	Cell Mean Depth (m)	Cell Mean Velocity ($m*s^{-1}$)	Cell Prob. Fry	Usable Width Fry (m)	Cell Prob. Parr	Usable Width Parr (m)	Cell Area (m^2)	Cell Discharge (m^3*s^{-1})
0.00	0.06	0.00	0.25	0.070	0.031	0.80	0.2	0.04	0.01	0.018	0.00053
0.50	0.08	0.06	0.50	0.080	0.060	0.95	0.5	0.09	0.04	0.040	0.00240
1.00	0.12	0.00	0.50	0.120	0.000	0.20	0.1	0.00	0.00	0.060	0.00000
1.50	0.17	0.19	0.50	0.170	0.190	1.00	0.5	0.57	0.28	0.085	0.01615
2.00	0.20	0.30	0.50	0.200	0.300	0.68	0.3	0.75	0.38	0.100	0.03000
2.50	0.20	0.33	0.50	0.200	0.330	0.58	0.3	0.75	0.38	0.100	0.03300
3.00	0.24	0.29	0.50	0.240	0.290	0.72	0.4	0.88	0.44	0.120	0.03480
3.50	0.27	0.35	0.50	0.270	0.350	0.49	0.2	0.95	0.48	0.135	0.04725
4.00	0.33	0.45	0.50	0.330	0.450	0.17	0.1	0.99	0.50	0.165	0.07425
4.50	0.32	0.28	0.50	0.320	0.280	0.59	0.3	0.98	0.49	0.160	0.04480
5.00	0.28	0.38	0.50	0.280	0.380	0.39	0.2	0.97	0.49	0.140	0.05320
5.50	0.33	0.27	0.50	0.330	0.270	0.60	0.3	0.99	0.50	0.165	0.04455
6.00	0.36	0.36	0.75	0.360	0.360	0.31	0.2	1.00	0.75	0.270	0.09720
7.00	0.36	0.36	1.00	0.360	0.360	0.31	0.3	1.00	1.00	0.360	0.12960
8.00	0.35	0.53	1.00	0.350	0.530	0.09	0.1	1.00	1.00	0.350	0.18550
9.00	0.42	0.36	1.00	0.420	0.360	0.22	0.2	1.00	1.00	0.420	0.15120
10.00	0.38	0.41	1.00	0.380	0.410	0.19	0.2	1.00	1.00	0.380	0.15580
11.00	0.40	0.40	1.50	0.400	0.400	0.18	0.3	1.00	1.50	0.600	0.24000
13.00	0.42	0.53	2.00	0.420	0.530	0.06	0.1	1.00	2.00	0.840	0.44520
15.00	0.45	0.61	1.00	0.435	0.570	0.04	0.0	0.97	0.97	0.435	0.24795
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000

DEPTH/VELOCITY TRANSECT DATA ANALYSIS SPREADSHEET
(CALCULATES W.U.A. & DISCHARGE)

Spreadsheet modified by Willliamson Environemental Consulting, from one provided by Ron Ptolemy and Aquatic Resources Ltd.

This spreadsheet applies Ptolemy WUP HSI curves, February 12, 2001.

SITE SK5 Skeena River 2 km upstream Sustut River

Stream:	Skeena	
Date:	99/09/23	
Mainstem/side-channel:	m	
Meter:	Marsh McBirney	
Metered at*:	40%	dfb
Transect width:	18.0	m

UTM:	9.9599597.6244271	
Watershed code:	400	
Site number:	SK5	
Transect #:	1	

Hydraulic type:	run	
Width:Mean Depth Ratio:	88.40	

Site length:	13.9	m
Site width:	5.8	m
Site area**:	81.2	m^2
Discharge:	0.313	m^3*s^{-1}

Transect type:	P	
Stream width:	30	m
Number of stations:	26	

NOTES: * dfb = depth from bottom.
** at unsymmetrical sites, area is calculated from field measurements, not as site length * site width.

SITE WEIGHTED MEANS		
Mean Depth:	0.2	m
Mean Velocity:	0.1	$m*s^{-1}$
Cross-sectional area :	3.7	m^2
Mean Probability (Fry):	85.3	%
Mean Probability (Parr):	33.5	%

ADJUSTED USABLE AREAS		
Usable Width for Fry:	15.3	m
%Transect Usable by Fry	85.3	%
Usable Area for Fry	69.2	m^2
Usable Width Parr:	6.0	m
%Transect Usable by Parr	33.5	%
Usable Area for Parr	27.2	m^2

This spread sheet is designed for depth/velocity transect data collected within a closed electrofishing site.

DEPTH/ VELOCITY DATA FOR WEIGHTED USABLE AREA (WUA) CALCULATIONS

TRANSECT DATA Station (m)	Depth (m)	Velocity (m/s)	Cell Width (m)	Cell Mean Depth (m)	Cell Mean Velocity ($m*s^{-1}$)	Cell Prob. Fry	Usable Width Fry (m)	Cell Prob. Parr	Usable Width Parr (m)	Cell Area (m^2)	Cell Discharge (m^3*s^{-1})
0.00	0.08	0.01	0.25	0.080	0.010	0.50	0.1	0.01	0.00	0.020	0.00020
0.50	0.08	0.01	0.50	0.080	0.010	0.50	0.3	0.01	0.01	0.040	0.00040
1.00	0.02	0.00	0.50	0.020	0.000	0.15	0.1	0.00	0.00	0.010	0.00000
1.50	0.06	0.02	0.50	0.060	0.020	0.70	0.4	0.02	0.01	0.030	0.00060
2.00	0.10	0.01	0.50	0.100	0.010	0.50	0.3	0.02	0.01	0.050	0.00050
2.50	0.10	0.01	0.50	0.100	0.010	0.50	0.3	0.02	0.01	0.050	0.00050
3.00	0.10	0.06	0.50	0.100	0.060	0.95	0.5	0.12	0.06	0.050	0.00300
3.50	0.25	0.05	0.50	0.250	0.050	0.90	0.5	0.27	0.14	0.125	0.00625
4.00	0.25	0.01	0.50	0.250	0.010	0.50	0.3	0.05	0.02	0.125	0.00125
4.50	0.18	0.07	0.50	0.180	0.070	1.00	0.5	0.27	0.14	0.090	0.00630
5.00	0.25	0.05	0.50	0.250	0.050	0.90	0.5	0.27	0.14	0.125	0.00625
5.50	0.19	0.04	0.50	0.190	0.040	0.85	0.4	0.18	0.09	0.095	0.00380
6.00	0.17	0.12	0.50	0.170	0.120	1.00	0.5	0.41	0.20	0.085	0.01020
6.50	0.18	0.12	0.50	0.180	0.120	1.00	0.5	0.43	0.21	0.090	0.01080
7.00	0.11	0.13	0.75	0.110	0.130	1.00	0.8	0.25	0.19	0.083	0.01073
8.00	0.22	0.14	1.00	0.220	0.140	1.00	1.0	0.59	0.59	0.220	0.03080
9.00	0.18	0.09	1.00	0.180	0.090	1.00	1.0	0.34	0.34	0.180	0.01620
10.00	0.23	0.10	1.00	0.230	0.100	1.00	1.0	0.47	0.47	0.230	0.02300
11.00	0.30	0.07	1.00	0.300	0.070	0.85	0.9	0.39	0.39	0.300	0.02100
12.00	0.27	0.17	1.00	0.270	0.170	0.95	1.0	0.77	0.77	0.270	0.04590
13.00	0.26	0.12	1.00	0.260	0.120	0.98	1.0	0.59	0.59	0.260	0.03120
14.00	0.19	0.11	1.00	0.190	0.110	1.00	1.0	0.43	0.43	0.190	0.02090
15.00	0.29	0.09	1.00	0.290	0.090	0.88	0.9	0.49	0.49	0.290	0.02610
16.00	0.32	0.04	1.00	0.320	0.040	0.66	0.7	0.25	0.25	0.320	0.01280
17.00	0.25	0.08	1.00	0.250	0.080	1.00	1.0	0.41	0.41	0.250	0.02000
18.00	0.10	0.01	0.50	0.175	0.045	0.85	0.4	0.16	0.08	0.088	0.00394
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000

DEPTH/VELOCITY TRANSECT DATA ANALYSIS SPREADSHEET
(CALCULATES W.U.A. & DISCHARGE)

Spreadsheet modified by Willliamson Environemental Consulting, from one provided by Ron Ptolemy and Aquatic Resources Ltd.

This spreadsheet applies Ptolemy WUP HSI curves, February 12, 2001.

SITE SK6 Skeena River 16 km downstream Sustut River

Stream:	Skeena	
Date:	99/09/23	
Mainstem/side-channel:	sc	
Meter:	Marsh McBirney	
Metered at*:	40%	dfb
Transect width:	15.0	m

Site length:	14.8	m
Site width:	9.1	m
Site area**:	134.7	m^2
Discharge:	0.420	m^3*s^{-1}

UTM:	9.5890.6236599	
Watershed code:	400	
Site number:	SK6	
Transect #:	1	

Hydraulic type:	Riffle	
Width:Mean Depth Ratio:	122.28	

Transect type:	P	
Stream width:	200	m
Number of stations:	28	

NOTES: * dfb = depth from bottom.

** at unsymmetrical sites, area is calculated from field measurements, not as site length * site width.

SITE WEIGHTED MEANS			**ADJUSTED USABLE AREAS**		
Mean Depth:	0.1	m	Usable Width for Fry:	12.2	m
Mean Velocity:	0.2	m*s^{-1}	%Transect Usable by Fry	81.3	%
Cross-sectional area :	1.8	m^2	Usable Area for Fry	109.5	m^2
Mean Probability (Fry):	81.3	%	Usable Width Parr:	5.6	m
Mean Probability (Parr):	37.2	%	%Transect Usable by Parr	37.2	%
			Usable Area for Parr	50.2	m^2

This spread sheet is designed for depth/velocity transect data collected within a closed electrofishing site.

DEPTH/ VELOCITY DATA FOR WEIGHTED USABLE AREA (WUA) CALCULATIONS

TRANSECT DATA											
Station (m)	Depth (m)	Velocity (m/s)	Cell Width (m)	Cell Mean Depth (m)	Cell Mean Velocity (m*s^{-1})	Cell Prob. Fry	Usable Width Fry (m)	Cell Prob. Parr	Usable Width Parr (m)	Cell Area (m^2)	Cell Discharge (m^3*s^{-1})
0.00	0.00	0.00	0.25	0.040	0.070	0.93	0.2	0.04	0.01	0.010	0.00070
0.50	0.08	0.14	0.50	0.080	0.140	1.00	0.5	0.18	0.09	0.040	0.00560
1.00	0.06	0.03	0.50	0.060	0.030	0.80	0.4	0.03	0.01	0.030	0.00090
1.50	0.06	0.11	0.50	0.060	0.110	1.00	0.5	0.09	0.05	0.030	0.00330
2.00	0.06	0.11	0.50	0.060	0.110	1.00	0.5	0.09	0.05	0.030	0.00330
2.50	0.06	0.01	0.50	0.060	0.010	0.50	0.3	0.01	0.00	0.030	0.00030
3.00	0.06	0.04	0.50	0.060	0.040	0.85	0.4	0.04	0.02	0.030	0.00120
3.50	0.06	0.02	0.50	0.060	0.020	0.70	0.4	0.02	0.01	0.030	0.00060
4.00	0.07	0.08	0.50	0.070	0.080	1.00	0.5	0.09	0.05	0.035	0.00280
4.50	0.10	0.16	0.50	0.100	0.160	1.00	0.5	0.26	0.13	0.050	0.00800
5.00	0.10	0.13	0.50	0.100	0.130	1.00	0.5	0.22	0.11	0.050	0.00650
5.50	0.10	0.18	0.50	0.100	0.180	1.00	0.5	0.28	0.14	0.050	0.00900
6.00	0.14	0.10	0.50	0.140	0.100	1.00	0.5	0.29	0.14	0.070	0.00700
6.50	0.14	0.14	0.50	0.140	0.140	1.00	0.5	0.37	0.18	0.070	0.00980
7.00	0.14	0.20	0.50	0.140	0.200	1.00	0.5	0.47	0.23	0.070	0.01400
7.50	0.12	0.25	0.50	0.120	0.250	0.86	0.4	0.42	0.21	0.060	0.01500
8.00	0.14	0.29	0.50	0.140	0.290	0.72	0.4	0.52	0.26	0.070	0.02030
8.50	0.13	0.27	0.50	0.130	0.270	0.80	0.4	0.46	0.23	0.065	0.01755
9.00	0.14	0.40	0.50	0.140	0.400	0.35	0.2	0.52	0.26	0.070	0.02800
9.50	0.20	0.32	0.50	0.200	0.320	0.62	0.3	0.75	0.38	0.100	0.03200
10.00	0.14	0.36	0.50	0.140	0.360	0.48	0.2	0.52	0.26	0.070	0.02520
10.50	0.15	0.35	0.50	0.150	0.350	0.52	0.3	0.55	0.28	0.075	0.02625
11.00	0.13	0.36	0.50	0.130	0.360	0.48	0.2	0.46	0.23	0.065	0.02340
11.50	0.17	0.21	0.50	0.170	0.210	0.97	0.5	0.60	0.30	0.085	0.01785
12.00	0.15	0.34	0.75	0.150	0.340	0.54	0.4	0.55	0.41	0.113	0.03825
13.00	0.20	0.20	1.00	0.200	0.200	1.00	1.0	0.68	0.68	0.200	0.04000
14.00	0.16	0.23	1.00	0.160	0.230	0.92	0.9	0.58	0.58	0.160	0.03680
15.00	0.17	0.42	0.50	0.165	0.325	0.62	0.3	0.60	0.30	0.083	0.02681
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000

DEPTH/VELOCITY TRANSECT DATA ANALYSIS SPREADSHEET
(CALCULATES W.U.A. & DISCHARGE)

Spreadsheet modified by Willliamson Environemental Consulting, from one provided by Ron Ptolemy and Aquatic Resources Ltd.

This spreadsheet applies Ptolemy WUP HSI curves, February 12, 2001.

SITE SK7 Skeena River 32 km downstream Sustut

Stream:	Skeena	
Date:	99/09/23	
Mainstem/side-channel:	m	
Meter:	Marsh McBirney	
Metered at*:	40%	dfb
Transect width:	11.5	m

UTM:	9.571156.6236680	
Watershed code:	400	
Site number:	SK7	
Transect #:	1	

Hydraulic type:	Riffle	
Width:Mean Depth Ratio:	83.44	

Site length:	14.5	m
Site width:	10.4	m
Site area**:	150.8	m^2
Discharge:	0.427	m^3*s^{-1}

Transect type:		
Stream width:	200	m
Number of stations:	24	

NOTES: * dfb = depth from bottom.
** at unsymmetrical sites, area is calculated from field measurements, not as site length * site width.

SITE WEIGHTED MEANS

Mean Depth:	0.1	m
Mean Velocity:	0.3	$m*s^{-1}$
Cross-sectional area :	1.6	m^2
Mean Probability (Fry):	56.8	%
Mean Probability (Parr):	41.2	%

ADJUSTED USABLE AREAS

Usable Width for Fry:	6.5	m
%Transect Usable by Fry	56.8	%
Usable Area for Fry	85.6	m^2
Usable Width Parr:	4.7	m
%Transect Usable by Parr	41.2	%
Usable Area for Parr	62.1	m^2

This spread sheet is designed for depth/velocity transect data collected within a closed electrofishing site.

DEPTH/ VELOCITY DATA FOR WEIGHTED USABLE AREA (WUA) CALCULATIONS

TRANSECT DATA Station (m)	Depth (m)	Velocity (m/s)	Cell Width (m)	Cell Mean Depth (m)	Cell Mean Velocity ($m*s^{-1}$)	Cell Prob. Fry	Usable Width Fry (m)	Cell Prob. Parr	Usable Width Parr (m)	Cell Area (m^2)	Cell Discharge (m^3*s^{-1})
0.00	0.00	0.00	0.25	0.010	0.000	0.10	0.0	0.00	0.00	0.003	0.00000
0.50	0.02	0.00	0.50	0.020	0.000	0.15	0.1	0.00	0.00	0.010	0.00000
1.00	0.04	0.00	0.50	0.040	0.000	0.19	0.1	0.00	0.00	0.020	0.00000
1.50	0.05	0.00	0.50	0.050	0.000	0.20	0.1	0.00	0.00	0.025	0.00000
2.00	0.07	0.00	0.50	0.070	0.000	0.20	0.1	0.00	0.00	0.035	0.00000
2.50	0.10	0.03	0.50	0.100	0.030	0.80	0.4	0.06	0.03	0.050	0.00150
3.00	0.06	0.03	0.50	0.060	0.030	0.80	0.4	0.03	0.01	0.030	0.00090
3.50	0.10	0.02	0.50	0.100	0.020	0.70	0.4	0.04	0.02	0.050	0.00100
4.00	0.12	0.10	0.50	0.120	0.100	1.00	0.5	0.23	0.12	0.060	0.00600
4.50	0.14	0.12	0.50	0.140	0.120	1.00	0.5	0.33	0.16	0.070	0.00840
5.00	0.18	0.10	0.50	0.180	0.100	1.00	0.5	0.37	0.19	0.090	0.00900
5.50	0.20	0.24	0.50	0.200	0.240	0.88	0.4	0.74	0.37	0.100	0.02400
6.00	0.16	0.34	0.50	0.160	0.340	0.54	0.3	0.60	0.30	0.080	0.02720
6.50	0.16	0.35	0.50	0.160	0.350	0.52	0.3	0.60	0.30	0.080	0.02800
7.00	0.15	0.25	0.50	0.150	0.250	0.86	0.4	0.55	0.28	0.075	0.01875
7.50	0.18	0.26	0.50	0.180	0.260	0.82	0.4	0.68	0.34	0.090	0.02340
8.00	0.14	0.31	0.50	0.140	0.310	0.65	0.3	0.52	0.26	0.070	0.02170
8.50	0.16	0.17	0.50	0.160	0.170	1.00	0.5	0.49	0.24	0.080	0.01360
9.00	0.17	0.36	0.50	0.170	0.360	0.48	0.2	0.65	0.33	0.085	0.03060
9.50	0.19	0.47	0.50	0.190	0.470	0.19	0.1	0.73	0.37	0.095	0.04465
10.00	0.20	0.49	0.50	0.200	0.490	0.17	0.1	0.75	0.38	0.100	0.04900
10.50	0.20	0.36	0.50	0.200	0.360	0.48	0.2	0.75	0.38	0.100	0.03600
11.00	0.26	0.41	0.50	0.260	0.410	0.31	0.2	0.93	0.47	0.130	0.05330
11.50	0.20	0.64	0.25	0.230	0.525	0.14	0.0	0.86	0.22	0.058	0.03019
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000

DEPTH/VELOCITY TRANSECT DATA ANALYSIS SPREADSHEET
(CALCULATES W.U.A. & DISCHARGE)

Spreadsheet modified by Willliamson Environemental Consulting, from one provided by Ron Ptolemy and Aquatic Resources Ltd.

This spreadsheet applies Ptolemy WUP HSI curves, February 12, 2001.

SITE SK8 Skeena River at Canyon Creek

Stream:	Skeena	
Date:	99/09/29	
Mainstem/side-channel:	sc	
Meter:	Marsh McBirney	
Metered at*:	40%	dfb
Transect width:	14.6	m

Site length:	15.4	m
Site width:	9.6	m
Site area**:	147.8	m^2
Discharge:	2.047	m^3*s^{-1}

UTM:	9.567349.6233837	
Watershed code:	400	
Site number:	SK8	
Transect #:	1	

Hydraulic type:	run	
Width:Mean Depth Ratio:	41.29	

Transect type:	P	
Stream width:	n/a	m
Number of stations:	17	

NOTES: * dfb = depth from bottom.
** at unsymmetrical sites, area is calculated from field measurements, not as site length * site width.

SITE WEIGHTED MEANS

Mean Depth:	0.4	m
Mean Velocity:	0.4	$m*s^{-1}$
Cross-sectional area :	5.2	m^2
Mean Probability (Fry):	41.6	%
Mean Probability (Parr):	69.3	%

ADJUSTED USABLE AREAS

Usable Width for Fry:	6.1	m
%Transect Usable by Fry	41.6	%
Usable Area for Fry	61.4	m^2
Usable Width Parr:	10.1	m
%Transect Usable by Parr	69.3	%
Usable Area for Parr	102.5	m^2

This spread sheet is designed for depth/velocity transect data collected within a closed electrofishing site.

DEPTH/ VELOCITY DATA FOR WEIGHTED USABLE AREA (WUA) CALCULATIONS

TRANSECT DATA Station (m)	Depth (m)	Velocity (m/s)	Cell Width (m)	Cell Mean Depth (m)	Cell Mean Velocity ($m*s^{-1}$)	Cell Prob. Fry	Usable Width Fry (m)	Cell Prob. Parr	Usable Width Parr (m)	Cell Area (m^2)	Cell Discharge (m^3*s^{-1})
0.00	0.03	0.00	0.20	0.045	0.000	0.19	0.0	0.00	0.00	0.009	0.00000
0.40	0.06	0.00	0.75	0.060	0.000	0.20	0.2	0.00	0.00	0.045	0.00000
1.50	0.13	0.02	0.95	0.130	0.020	0.70	0.7	0.05	0.05	0.124	0.00247
2.30	0.12	0.04	0.75	0.120	0.040	0.85	0.6	0.11	0.08	0.090	0.00360
3.00	0.16	0.08	0.75	0.160	0.080	1.00	0.8	0.27	0.20	0.120	0.00960
3.80	0.22	0.14	0.80	0.220	0.140	1.00	0.8	0.59	0.47	0.176	0.02464
4.60	0.26	0.07	0.75	0.260	0.070	0.98	0.7	0.37	0.28	0.195	0.01365
5.30	0.28	0.19	0.70	0.280	0.190	0.92	0.6	0.84	0.59	0.196	0.03724
6.00	0.30	0.28	0.75	0.300	0.280	0.64	0.5	0.98	0.74	0.225	0.06300
6.80	0.30	0.40	0.65	0.300	0.400	0.30	0.2	0.98	0.64	0.195	0.07800
7.30	0.30	0.39	0.75	0.300	0.390	0.32	0.2	0.98	0.74	0.225	0.08775
8.30	0.36	0.45	0.85	0.360	0.450	0.14	0.1	1.00	0.85	0.306	0.13770
9.00	0.40	0.28	0.95	0.400	0.280	0.39	0.4	1.00	0.95	0.380	0.10640
10.20	0.62	0.56	1.40	0.620	0.560	0.01	0.0	0.99	1.39	0.868	0.48608
11.80	0.56	0.24	1.50	0.560	0.240	0.15	0.2	0.98	1.47	0.840	0.20160
13.20	0.54	0.65	1.40	0.540	0.650	0.00	0.0	0.85	1.19	0.756	0.49140
14.60	0.64	0.82	0.70	0.590	0.735	0.00	0.0	0.71	0.50	0.413	0.30356
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000

DEPTH/VELOCITY TRANSECT DATA ANALYSIS SPREADSHEET
(CALCULATES W.U.A. & DISCHARGE)

Spreadsheet modified by Willliamson Environemental Consulting, from one provided by Ron Ptolemy and Aquatic Resources Ltd.

This spreadsheet applies Ptolemy WUP HSI curves, February 12, 2001.

SITE SK9 Skeena River downstream of Canyon Creek

Stream:	Skeena	
Date:	99/09/29	
Mainstem/side-channel:	m	
Meter:	Marsh McBirney	
Metered at*:	40%	dfb
Transect width:	9.3	m

UTM:	9.563122.6217468	
Watershed code:	400	
Site number:	SK9	
Transect #:	1	

Hydraulic type:	run	
Width:Mean Depth Ratio:	37.74	

Site length:	17.1	m
Site width:	4.3	m
Site area**:	73.5	m^2
Discharge:	0.394	m^3*s^{-1}

Transect type:	P	
Stream width:	91.95	m
Number of stations:	14	

NOTES: * dfb = depth from bottom.
** at unsymmetrical sites, area is calculated from field measurements, not as site length * site width.

SITE WEIGHTED MEANS

Mean Depth:	0.2	m
Mean Velocity:	0.2	m*s^{-1}
Cross-sectional area :	2.3	m^2
Mean Probability (Fry):	68.8	%
Mean Probability (Parr):	49.2	%

ADJUSTED USABLE AREAS

Usable Width for Fry:	6.4	m
%Transect Usable by Fry	68.8	%
Usable Area for Fry	50.6	m^2
Usable Width Parr:	4.6	m
%Transect Usable by Parr	49.2	%
Usable Area for Parr	36.2	m^2

This spread sheet is designed for depth/velocity transect data collected within a closed electrofishing site.

DEPTH/ VELOCITY DATA FOR WEIGHTED USABLE AREA (WUA) CALCULATIONS

TRANSECT DATA Station (m)	Depth (m)	Velocity (m/s)	Cell Width (m)	Cell Mean Depth (m)	Cell Mean Velocity (m*s^{-1})	Cell Prob. Fry	Usable Width Fry (m)	Cell Prob. Parr	Usable Width Parr (m)	Cell Area (m^2)	Cell Discharge (m^3*s^{-1})
0.00	0.00	0.00	0.25	0.010	0.010	0.25	0.1	0.00	0.00	0.003	0.00003
0.50	0.02	0.02	0.55	0.020	0.020	0.53	0.3	0.00	0.00	0.011	0.00022
1.10	0.10	0.02	0.80	0.100	0.020	0.70	0.6	0.04	0.03	0.080	0.00160
2.10	0.22	0.02	1.05	0.220	0.020	0.70	0.7	0.09	0.10	0.231	0.00462
3.20	0.25	0.17	1.10	0.250	0.170	1.00	1.1	0.74	0.81	0.275	0.04675
4.30	0.26	0.05	0.90	0.260	0.050	0.88	0.8	0.28	0.25	0.234	0.01170
5.00	0.30	0.16	0.45	0.300	0.160	0.85	0.4	0.76	0.34	0.135	0.02160
5.20	0.28	0.28	0.60	0.280	0.280	0.69	0.4	0.97	0.58	0.168	0.04704
6.20	0.32	0.25	0.70	0.320	0.250	0.67	0.5	0.98	0.69	0.224	0.05600
6.60	0.28	0.19	0.55	0.280	0.190	0.92	0.5	0.84	0.46	0.154	0.02926
7.30	0.34	0.11	0.45	0.340	0.110	0.72	0.3	0.58	0.26	0.153	0.01683
7.50	0.28	0.60	0.45	0.280	0.600	0.06	0.0	0.90	0.41	0.126	0.07560
8.20	0.26	0.02	0.90	0.260	0.020	0.69	0.6	0.10	0.09	0.234	0.00468
9.30	0.70	0.57	0.55	0.480	0.295	0.22	0.1	1.00	0.55	0.264	0.07788
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000

DEPTH/VELOCITY TRANSECT DATA ANALYSIS SPREADSHEET
(CALCULATES W.U.A. & DISCHARGE)

Spreadsheet modified by Willliamson Environemental Consulting, from one provided by Ron Ptolemy and Aquatic Resources Ltd.

This spreadsheet applies Ptolemy WUP HSI curves, February 12, 2001.

SITE SK10 Skeena River 5 km downstream of Sicintine

Stream:	Skeena	
Date:	99/09/17	
Mainstem/side-channel:	m	
Meter:	Marsh McBirney	
Metered at*:	40%	dfb
Transect width:	7.3	m

UTM:	9.565195.6209846	
Watershed code:	400	
Site number:	SK10	
Transect #:	1	

Hydraulic type:	run	
Width:Mean Depth Ratio:	56.08	

Site length:	17.3	m
Site width:	5.1	m
Site area**:	88.2	m^2
Discharge:	0.032	m^3*s^{-1}

Transect type:	P	
Stream width:	146.9	m
Number of stations:	9	

NOTES: * dfb = depth from bottom.

** at unsymmetrical sites, area is calculated from field measurements, not as site length * site width.

SITE WEIGHTED MEANS

Mean Depth:	0.1	m
Mean Velocity:	0.0	$m*s^{-1}$
Cross-sectional area :	1.0	m^2
Mean Probability (Fry):	44.2	%
Mean Probability (Parr):	8.8	%

ADJUSTED USABLE AREAS

Usable Width for Fry:	3.2	m
%Transect Usable by Fry	44.2	%
Usable Area for Fry	39.0	m^2
Usable Width Parr:	0.6	m
%Transect Usable by Parr	8.8	%
Usable Area for Parr	7.8	m^2

This spread sheet is designed for depth/velocity transect data collected within a closed electrofishing site.

DEPTH/ VELOCITY DATA FOR WEIGHTED USABLE AREA (WUA) CALCULATIONS

TRANSECT DATA Station (m)	Depth (m)	Velocity (m/s)	Cell Width (m)	Cell Mean Depth (m)	Cell Mean Velocity ($m*s^{-1}$)	Cell Prob. Fry	Usable Width Fry (m)	Cell Prob. Parr	Usable Width Parr (m)	Cell Area (m^2)	Cell Discharge (m^3*s^{-1})
0.00	0.04	0.00	0.80	0.060	0.000	0.20	0.2	0.00	0.00	0.048	0.00000
1.60	0.08	0.00	1.20	0.080	0.000	0.20	0.2	0.00	0.00	0.096	0.00000
2.40	0.14	0.01	0.60	0.140	0.010	0.50	0.3	0.03	0.02	0.084	0.00084
2.80	0.26	0.06	0.55	0.260	0.060	0.93	0.5	0.33	0.18	0.143	0.00858
3.50	0.25	0.09	0.95	0.250	0.090	1.00	1.0	0.46	0.43	0.238	0.02138
4.70	0.16	0.00	1.05	0.160	0.000	0.20	0.2	0.00	0.00	0.168	0.00000
5.60	0.06	0.02	0.85	0.060	0.020	0.70	0.6	0.02	0.01	0.051	0.00102
6.40	0.11	0.00	0.85	0.110	0.000	0.20	0.2	0.00	0.00	0.094	0.00000
7.30	0.02	0.00	0.45	0.065	0.000	0.20	0.1	0.00	0.00	0.029	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000

DEPTH/VELOCITY TRANSECT DATA ANALYSIS SPREADSHEET
(CALCULATES W.U.A. & DISCHARGE)

Spreadsheet modified by Williamson Environmental Consulting, from one provided by Ron Ptolemy, Poul Bech, and Rob Knight.

This spreadsheet applies Ptolemy WUP HSI curves, February 12, 2001.

Williamson Environmental Consulting **SITE SK11 Skeena River upstream of Kuldo Bridge**

Stream:	Skeena	
Date:	99/09/30	
Mainstem/side-channel:	m	
Meter:	Marsh MCBirney	
Metered at*:	40%	dfb
Transect width:	8.8	m

UTM:	9.569911.6194874
Watershed code:	400
Site number:	SK11
Transect #:	1

Hydraulic type:	run
Width:Mean Depth Ratio:	39.15

Site length:	13.1	m
Site width:	6.2	m
Site area**:	81.2	m^2
Discharge:	0.761	m^3*s^{-1}

Transect type:	P	
Stream width:	115	m
Number of stations:	13	

NOTES: * dfb = depth from bottom.
** at unsymmetrical sites, area is calculated from field measurements, not as site length * site width.

SITE WEIGHTED MEANS

Mean Depth:	0.2	m
Mean Velocity:	0.4	$m*s^{-1}$
Cross-sectional area :	2.0	m^2
Mean Probability (Fry):	46.2	%
Mean Probability (Parr):	67.8	%

ADJUSTED USABLE AREAS

Usable Width for Fry:	4.1	m
%Transect Usable by Fry	46.2	%
Usable Area for Fry	37.5	m^2
Usable Width Parr:	6.0	m
%Transect Usable by Parr	67.8	%
Usable Area for Parr	55.1	m^2

This spread sheet is designed for depth/velocity transect data collected within a closed electrofishing site.

DEPTH/ VELOCITY DATA FOR WEIGHTED USABLE AREA (WUA) CALCULATIONS

TRANSECT DATA Station (m)	Depth (m)	Velocity (m/s)	Cell Width (m)	Cell Mean Depth (m)	Cell Mean Velocity ($m*s^{-1}$)	Cell Prob. Fry	Usable Width Fry (m)	Cell Prob. Parr	Usable Width Parr (m)	Cell Area (m^2)	Cell Discharge (m^3*s^{-1})
0.00	0.00	0.00	0.15	0.040	0.250	0.80	0.1	0.10	0.02	0.006	0.00150
0.30	0.08	0.50	0.55	0.080	0.500	0.16	0.1	0.25	0.14	0.044	0.02200
1.10	0.12	0.30	0.75	0.120	0.300	0.68	0.5	0.42	0.32	0.090	0.02700
1.80	0.17	0.04	0.70	0.170	0.040	0.85	0.6	0.16	0.11	0.119	0.00476
2.50	0.18	0.50	0.70	0.180	0.500	0.16	0.1	0.68	0.48	0.126	0.06300
3.20	0.18	0.24	0.70	0.180	0.240	0.88	0.6	0.67	0.47	0.126	0.03024
3.90	0.20	0.13	0.65	0.200	0.130	1.00	0.7	0.50	0.33	0.130	0.01690
4.50	0.22	0.19	0.55	0.220	0.190	1.00	0.6	0.72	0.40	0.121	0.02299
5.00	0.20	0.36	0.65	0.200	0.360	0.48	0.3	0.75	0.49	0.130	0.04680
5.80	0.24	0.46	0.90	0.240	0.460	0.21	0.2	0.88	0.79	0.216	0.09936
6.80	0.29	0.49	0.95	0.290	0.490	0.15	0.1	0.97	0.92	0.276	0.13500
7.70	0.38	0.43	1.00	0.380	0.430	0.16	0.2	1.00	1.00	0.380	0.16340
8.80	0.40	0.76	0.55	0.390	0.595	0.04	0.0	0.94	0.52	0.215	0.12763
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000

DEPTH/VELOCITY TRANSECT DATA ANALYSIS SPREADSHEET
(CALCULATES W.U.A. & DISCHARGE)

Spreadsheet modified by Williamson Environmental Consulting, from one provided by Ron Ptolemy, Poul Bech, and Rob Knight.

This spreadsheet applies Ptolemy WUP HSI curves, February 12, 2001.

Williamson Environmental Consulting **SITE SK11 Skeena River upstream of Kuldo Bridge**

Stream:	Skeena	
Date:	99/09/30	
Mainstem/side-channel:	m	
Meter:	Marsh MCBirney	
Metered at*:	40%	dfb
Transect width:	8.8	m

Site length:	13.1	m
Site width:	6.2	m
Site area**:	81.2	m^2
Discharge:	0.761	m^3*s^{-1}

UTM:	9.569911.6194874	
Watershed code:	400	
Site number:	SK11	
Transect #:	1	

Hydraulic type:	run	
Width:Mean Depth Ratio:	39.15	

Transect type:	P	
Stream width:	115	m
Number of stations:	13	

NOTES: * dfb = depth from bottom.
** at unsymmetrical sites, area is calculated from field measurements, not as site length * site width.

SITE WEIGHTED MEANS

Mean Depth:	0.2	m
Mean Velocity:	0.4	$m*s^{-1}$
Cross-sectional area :	2.0	m^2
Mean Probability (Fry):	46.2	%
Mean Probability (Parr):	67.8	%

ADJUSTED USABLE AREAS

Usable Width for Fry:	4.1	m
%Transect Usable by Fry	46.2	%
Usable Area for Fry	37.5	m^2
Usable Width Parr:	6.0	m
%Transect Usable by Parr	67.8	%
Usable Area for Parr	55.1	m^2

This spread sheet is designed for depth/velocity transect data collected within a closed electrofishing site.

DEPTH/ VELOCITY DATA FOR WEIGHTED USABLE AREA (WUA) CALCULATIONS

TRANSECT DATA Station (m)	Depth (m)	Velocity (m/s)	Cell Width (m)	Cell Mean Depth (m)	Cell Mean Velocity ($m*s^{-1}$)	Cell Prob. Fry	Usable Width Fry (m)	Cell Prob. Parr	Usable Width Parr (m)	Cell Area (m^2)	Cell Discharge (m^3*s^{-1})
0.00	0.00	0.00	0.15	0.040	0.250	0.80	0.1	0.10	0.02	0.006	0.00150
0.30	0.08	0.50	0.55	0.080	0.500	0.16	0.1	0.25	0.14	0.044	0.02200
1.10	0.12	0.30	0.75	0.120	0.300	0.68	0.5	0.42	0.32	0.090	0.02700
1.80	0.17	0.04	0.70	0.170	0.040	0.85	0.6	0.16	0.11	0.119	0.00476
2.50	0.18	0.50	0.70	0.180	0.500	0.16	0.1	0.68	0.48	0.126	0.06300
3.20	0.18	0.24	0.70	0.180	0.240	0.88	0.6	0.67	0.47	0.126	0.03024
3.90	0.20	0.13	0.65	0.200	0.130	1.00	0.7	0.50	0.33	0.130	0.01690
4.50	0.22	0.19	0.55	0.220	0.190	1.00	0.6	0.72	0.40	0.121	0.02299
5.00	0.20	0.36	0.65	0.200	0.360	0.48	0.3	0.75	0.49	0.130	0.04680
5.80	0.24	0.46	0.90	0.240	0.460	0.21	0.2	0.88	0.79	0.216	0.09936
6.80	0.29	0.49	0.95	0.290	0.490	0.15	0.1	0.97	0.92	0.276	0.13500
7.70	0.38	0.43	1.00	0.380	0.430	0.16	0.2	1.00	1.00	0.380	0.16340
8.80	0.40	0.76	0.55	0.390	0.595	0.04	0.0	0.94	0.52	0.215	0.12763
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000

DEPTH/VELOCITY TRANSECT DATA ANALYSIS SPREADSHEET
(CALCULATES W.U.A. & DISCHARGE)

Spreadsheet modified by Willliamson Environemental Consulting, from one provided by Ron Ptolemy and Aquatic Resources Ltd.

This spreadsheet applies Ptolemy WUP HSI curves, February 12, 2001.

SITE SK12 Skeena River upstream Babine River

Stream:	Skeena	
Date:	99/09/30	
Mainstem/side-channel:	m	
Meter:	Marsh McBirney	
Metered at*:	40%	dfb
Transect width:	10.2	m

Site length:	15.2	m
Site width:	8.4	m
Site area**:	127.7	m^2
Discharge:	0.312	m^3*s^{-1}

UTM:	9.564738.6184525	
Watershed code:	400	
Site number:	SK12	
Transect #:	1	

Hydraulic type:	run	
Width:Mean Depth Ratio:	50.65	

Transect type:	P	
Stream width:	208	m
Number of stations:	17	

NOTES: * dfb = depth from bottom.
** at unsymmetrical sites, area is calculated from field measurements, not as site length * site width.

SITE WEIGHTED MEANS

Mean Depth:	0.2	m
Mean Velocity:	0.2	m*s^{-1}
Cross-sectional area :	2.1	m^2
Mean Probability (Fry):	51.3	%
Mean Probability (Parr):	33.0	%

ADJUSTED USABLE AREAS

Usable Width for Fry:	5.2	m
%Transect Usable by Fry	51.3	%
Usable Area for Fry	65.5	m^2
Usable Width Parr:	3.4	m
%Transect Usable by Parr	33.0	%
Usable Area for Parr	42.1	m^2

This spread sheet is designed for depth/velocity transect data collected within a closed electrofishing site.

DEPTH/ VELOCITY DATA FOR WEIGHTED USABLE AREA (WUA) CALCULATIONS

TRANSECT DATA Station (m)	Depth (m)	Velocity (m/s)	Cell Width (m)	Cell Mean Depth (m)	Cell Mean Velocity (m*s^{-1})	Cell Prob. Fry	Usable Width Fry (m)	Cell Prob. Parr	Usable Width Parr (m)	Cell Area (m^2)	Cell Discharge (m^3*s^{-1})
0.00	0.00	0.00	0.25	0.020	0.050	0.68	0.2	0.00	0.00	0.005	0.00025
0.50	0.04	0.10	0.60	0.040	0.100	0.93	0.6	0.06	0.03	0.024	0.00240
1.20	0.12	0.11	0.50	0.120	0.110	1.00	0.5	0.25	0.12	0.060	0.00660
1.50	0.13	0.25	0.35	0.130	0.250	0.86	0.3	0.46	0.16	0.046	0.01138
1.90	0.23	0.45	0.55	0.230	0.450	0.22	0.1	0.86	0.47	0.127	0.05693
2.60	0.30	0.37	0.55	0.300	0.370	0.37	0.2	0.98	0.54	0.165	0.06105
3.00	0.37	0.35	0.60	0.370	0.350	0.32	0.2	1.00	0.60	0.222	0.07770
3.80	0.32	0.19	0.60	0.320	0.190	0.78	0.5	0.85	0.51	0.192	0.03648
4.20	0.37	0.20	0.50	0.370	0.200	0.62	0.3	0.90	0.45	0.185	0.03700
4.80	0.29	0.05	0.60	0.290	0.050	0.79	0.5	0.29	0.17	0.174	0.00870
5.40	0.22	0.04	0.60	0.220	0.040	0.85	0.5	0.21	0.12	0.132	0.00528
6.00	0.16	0.08	0.65	0.160	0.080	1.00	0.7	0.27	0.18	0.104	0.00832
6.70	0.20	0.00	0.65	0.200	0.000	0.20	0.1	0.00	0.00	0.130	0.00000
7.30	0.25	0.00	0.60	0.250	0.000	0.20	0.1	0.00	0.00	0.150	0.00000
7.90	0.20	0.00	0.85	0.200	0.000	0.20	0.2	0.00	0.00	0.170	0.00000
9.00	0.10	0.00	1.15	0.100	0.000	0.20	0.2	0.00	0.00	0.115	0.00000
10.20	0.08	0.00	0.60	0.090	0.000	0.20	0.1	0.00	0.00	0.054	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000

DEPTH/VELOCITY TRANSECT DATA ANALYSIS SPREADSHEET
(CALCULATES W.U.A. & DISCHARGE)

Spreadsheet modified by Willliamson Environemental Consulting, from one provided by Ron Ptolemy and Aquatic Resources Ltd.

This spreadsheet applies Ptolemy WUP HSI curves, February 12, 2001.

SITE SK13 Skeena River accross from Salmon River

Stream:	Skeena	
Date:	9/9/2021	
Mainstem/side-channel:	m	
Meter:	Marsh McBirney	
Metered at*:	40%	dfb
Transect width:	7.0	m

Site length:	17.4	m
Site width:	4.3	m
Site area**:	74.8	m^2
Discharge:	0.423	m^3*s^{-1}

UTM:	9.583697.6134539	
Watershed code:	400	
Site number:	SK13	
Transect #:	1	

Hydraulic type:	run	
Width:Mean Depth Ratio:	31.11	

Transect type:	P	
Stream width:	n/a	m
Number of stations:	15	

NOTES: * dfb = depth from bottom.
** at unsymmetrical sites, area is calculated from field measurements, not as site length * site width.

SITE WEIGHTED MEANS

Mean Depth:	0.2	m
Mean Velocity:	0.3	$m*s^{-1}$
Cross-sectional area :	1.6	m^2
Mean Probability (Fry):	74.5	%
Mean Probability (Parr):	59.2	%

ADJUSTED USABLE AREAS

Usable Width for Fry:	5.2	m
%Transect Usable by Fry	74.5	%
Usable Area for Fry	55.7	m^2
Usable Width Parr:	4.1	m
%Transect Usable by Parr	59.2	%
Usable Area for Parr	44.3	m^2

This spread sheet is designed for depth/velocity transect data collected within a closed electrofishing site.

DEPTH/ VELOCITY DATA FOR WEIGHTED USABLE AREA (WUA) CALCULATIONS

TRANSECT DATA Station (m)	Depth (m)	Velocity (m/s)	Cell Width (m)	Cell Mean Depth (m)	Cell Mean Velocity ($m*s^{-1}$)	Cell Prob. Fry	Usable Width Fry (m)	Cell Prob. Parr	Usable Width Parr (m)	Cell Area (m^2)	Cell Discharge (m^3*s^{-1})
0.00	0.02	0.00	0.25	0.040	0.020	0.65	0.2	0.01	0.00	0.010	0.00020
0.50	0.06	0.04	0.50	0.060	0.040	0.85	0.4	0.04	0.02	0.030	0.00120
1.00	0.10	0.10	0.50	0.100	0.100	1.00	0.5	0.18	0.09	0.050	0.00500
1.50	0.16	0.13	0.50	0.160	0.130	1.00	0.5	0.40	0.20	0.080	0.01040
2.00	0.22	0.14	0.50	0.220	0.140	1.00	0.5	0.59	0.29	0.110	0.01540
2.50	0.27	0.08	0.50	0.270	0.080	0.95	0.5	0.43	0.21	0.135	0.01080
3.00	0.22	0.15	0.50	0.220	0.150	1.00	0.5	0.62	0.31	0.110	0.01650
3.50	0.20	0.12	0.50	0.200	0.120	1.00	0.5	0.47	0.24	0.100	0.01200
4.00	0.20	0.14	0.50	0.200	0.140	1.00	0.5	0.53	0.27	0.100	0.01400
4.50	0.26	0.43	0.50	0.260	0.430	0.26	0.1	0.93	0.47	0.130	0.05590
5.00	0.30	0.17	0.50	0.300	0.170	0.85	0.4	0.79	0.40	0.150	0.02550
5.50	0.29	0.44	0.50	0.290	0.440	0.22	0.1	0.97	0.49	0.145	0.06380
6.00	0.24	0.25	0.50	0.240	0.250	0.86	0.4	0.88	0.44	0.120	0.03000
6.50	0.40	0.47	0.50	0.400	0.470	0.10	0.0	1.00	0.50	0.200	0.09400
7.00	0.44	0.83	0.25	0.420	0.650	0.01	0.0	0.87	0.22	0.105	0.06825
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000

DEPTH/VELOCITY TRANSECT DATA ANALYSIS SPREADSHEET
(CALCULATES W.U.A. & DISCHARGE)

Spreadsheet modified by Willliamson Environemental Consulting, from one provided by Ron Ptolemy and Aquatic Resources Ltd.

This spreadsheet applies Ptolemy WUP HSI curves, February 12, 2001.

SITE SK14 Skeena

Stream:	Skeena	
Date:	99/10/08	
Mainstem/side-channel:	m	
Meter:	Marsh McBirney	
Metered at*:	40%	dfb
Transect width:	0.0	m

UTM:	9.579384.6169373	
Watershed code:	400	
Site number:	SK14	
Transect #:	1	

Hydraulic type:	run	
Width:Mean Depth Ratio:		

Site length:	15.9	m
Site width:	9.8	m
Site area**:	155.8	m^2
Discharge:		m^3*s^{-1}

Transect type:	P	
Stream width:	26.01	m
Number of stations:	2	

NOTES: * dfb = depth from bottom.
** at unsymmetrical sites, area is calculated from field measurements, not as site length * site width.

SITE WEIGHTED MEANS		ADJUSTED USABLE AREAS	
Mean Depth:	m	Usable Width for Fry:	m
Mean Velocity:	m*s^{-1}	%Transect Usable by Fry	%
Cross-sectional area :	m^2	Usable Area for Fry	m^2
Mean Probability (Fry):	%	Usable Width Parr:	m
Mean Probability (Parr):	%	%Transect Usable by Parr	%
		Usable Area for Parr	m^2

This spread sheet is designed for depth/velocity transect data collected within a closed electrofishing site.

DEPTH/ VELOCITY DATA FOR WEIGHTED USABLE AREA (WUA) CALCULATIONS

TRANSECT DATA			Cell	Cell	Cell	Cell	Usable	Cell	Usable	Cell	Cell
Station (m)	Depth (m)	Velocity (m/s)	Width (m)	Mean Depth (m)	Mean Velocity (m*s^{-1})	Prob. Fry	Width Fry (m)	Prob. Parr	Width Parr (m)	Area (m^2)	Discharge (m^3*s^{-1})
Meter Malfunctioned			#VALUE!	0.000	0.000	0.00	#VALUE!	0.00	#VALUE!	#VALUE!	#VALUE!
Data Not Used			#VALUE!	0.000	0.000	0.00	#VALUE!	0.00	#VALUE!	#VALUE!	#VALUE!
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000

DEPTH/VELOCITY TRANSECT DATA ANALYSIS SPREADSHEET
(CALCULATES W.U.A. & DISCHARGE)

Spreadsheet modified by Willliamson Environemental Consulting, from one provided by Ron Ptolemy and Aquatic Resources Ltd.

This spreadsheet applies Ptolemy WUP HSI curves, February 12, 2001.

SITE SK15 Skeena

Stream:	Skeena	
Date:	10/9/2008	
Mainstem/side-channel:	m	
Meter:	Marsh McBirney	
Metered at*:	40%	dfb
Transect width:	0.0	m

UTM:	9.584482.6151405
Watershed code:	400
Site number:	SK15
Transect #:	1

Hydraulic type:	riffle	
Width:Mean Depth Ratio:		

Site length:	10.8	m
Site width:	7.6	m
Site area**:	82.1	m^2
Discharge:		m^3*s^{-1}

Transect type:	P	
Stream width:	189.14	m
Number of stations:	2	

NOTES: * dfb = depth from bottom.
** at unsymmetrical sites, area is calculated from field measurements, not as site length * site width.

SITE WEIGHTED MEANS		ADJUSTED USABLE AREAS	
Mean Depth:	m	Usable Width for Fry:	m
Mean Velocity:	$m*s^{-1}$	%Transect Usable by Fry	%
Cross-sectional area :	m^2	Usable Area for Fry	m^2
Mean Probability (Fry):	%	Usable Width Parr:	m
Mean Probability (Parr):	%	%Transect Usable by Parr	%
		Usable Area for Parr	m^2

This spread sheet is designed for depth/velocity transect data collected within a closed electrofishing site.

DEPTH/ VELOCITY DATA FOR WEIGHTED USABLE AREA (WUA) CALCULATIONS

TRANSECT DATA Station (m)	Depth (m)	Velocity (m/s)	Cell Width (m)	Cell Mean Depth (m)	Cell Mean Velocity ($m*s^{-1}$)	Cell Prob. Fry	Usable Width Fry (m)	Cell Prob. Parr	Usable Width Parr (m)	Cell Area (m^2)	Cell Discharge (m^3*s^{-1})
Meter was not working			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
Data not used			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000

DEPTH/VELOCITY TRANSECT DATA ANALYSIS SPREADSHEET
(CALCULATES W.U.A. & DISCHARGE)

Spreadsheet modified by Willliamson Environemental Consulting, from one provided by Ron Ptolemy and Aquatic Resources Ltd.

This spreadsheet applies Ptolemy WUP HSI curves, February 12, 2001.

SITE SK16 Skeena River @ Kipsiox 6 mile bridge

Stream:	Skeena	
Date:	99/10/13	
Mainstem/side-channel:	m	
Meter:	Marsh McBirney	
Metered at*:	40%	dfb
Transect width:	15.2	m

UTM:	9.582970.6126906
Watershed code:	400
Site number:	SK16
Transect #:	1

Hydraulic type:	riffle
Width:Mean Depth Ratio:	73.12

Site length:	8.5	m
Site width:	9.4	m
Site area**:	79.9	m^2
Discharge:	0.880	m^3*s^{-1}

Transect type:	P	
Stream width:	224	m
Number of stations:	17	

NOTES: * dfb = depth from bottom.
** at unsymmetrical sites, area is calculated from field measurements, not as site length * site width.

SITE WEIGHTED MEANS

Mean Depth:	0.2	m
Mean Velocity:	0.3	m*s^{-1}
Cross-sectional area :	3.2	m^2
Mean Probability (Fry):	72.8	%
Mean Probability (Parr):	53.7	%

ADJUSTED USABLE AREAS

Usable Width for Fry:	11.1	m
%Transect Usable by Fry	72.8	%
Usable Area for Fry	58.2	m^2
Usable Width Parr:	8.2	m
%Transect Usable by Parr	53.7	%
Usable Area for Parr	42.9	m^2

This spread sheet is designed for depth/velocity transect data collected within a closed electrofishing site.

DEPTH/ VELOCITY DATA FOR WEIGHTED USABLE AREA (WUA) CALCULATIONS

TRANSECT DATA Station (m)	Depth (m)	Velocity (m/s)	Cell Width (m)	Cell Mean Depth (m)	Cell Mean Velocity (m*s^{-1})	Cell Prob. Fry	Usable Width Fry (m)	Cell Prob. Parr	Usable Width Parr (m)	Cell Area (m^2)	Cell Discharge (m^3*s^{-1})
0.00	0.00	0.00	0.85	0.035	0.035	0.68	0.6	0.01	0.01	0.030	0.00104
1.70	0.07	0.07	1.15	0.070	0.070	1.00	1.2	0.08	0.09	0.081	0.00564
2.30	0.05	0.09	0.65	0.050	0.090	1.00	0.7	0.07	0.04	0.033	0.00293
3.00	0.08	0.03	0.80	0.080	0.030	0.80	0.6	0.05	0.04	0.064	0.00192
3.90	0.12	0.14	0.80	0.120	0.140	1.00	0.8	0.30	0.24	0.096	0.01344
4.60	0.12	0.14	0.70	0.120	0.140	1.00	0.7	0.30	0.21	0.084	0.01176
5.30	0.12	0.03	0.70	0.120	0.030	0.80	0.6	0.08	0.05	0.084	0.00252
6.00	0.14	0.25	0.80	0.140	0.250	0.86	0.7	0.52	0.42	0.112	0.02800
6.90	0.15	0.15	0.80	0.150	0.150	1.00	0.8	0.41	0.33	0.120	0.01800
7.60	0.16	0.14	0.65	0.160	0.140	1.00	0.6	0.43	0.28	0.104	0.01456
8.20	0.15	0.22	0.70	0.150	0.220	0.94	0.7	0.52	0.36	0.105	0.02310
9.00	0.20	0.19	0.85	0.200	0.190	1.00	0.9	0.65	0.55	0.170	0.03230
9.90	0.23	0.25	0.85	0.230	0.250	0.86	0.7	0.86	0.73	0.196	0.04888
10.70	0.32	0.24	1.20	0.320	0.240	0.69	0.8	0.96	1.15	0.384	0.09216
12.30	0.40	0.39	1.55	0.400	0.390	0.20	0.3	1.00	1.55	0.620	0.24180
13.80	0.42	0.30	1.45	0.420	0.300	0.31	0.5	1.00	1.45	0.609	0.18270
15.20	0.35	0.88	0.70	0.385	0.590	0.04	0.0	0.94	0.66	0.270	0.15901
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000

DEPTH/VELOCITY TRANSECT DATA ANALYSIS SPREADSHEET
(CALCULATES W.U.A. & DISCHARGE)

Spreadsheet modified by Willliamson Environemental Consulting, from one provided by Ron Ptolemy and Aquatic Resources Ltd.

This spreadsheet applies Ptolemy WUP HSI curves, February 12, 2001.

SITE SK17 Skeena River 12 km downstream Bulkley River

Stream:	Skeena	
Date:	99/10/13	
Mainstem/side-channel:	m	
Meter:	Marsh McBirney	
Metered at*:	40%	dfb
Transect width:	12.2	m

Site length:	12.4	m
Site width:	8.7	m
Site area**:	107.9	m^2
Discharge:	0.772	m^3*s^{-1}

UTM:	9.583107.6119615
Watershed code:	400
Site number:	SK17
Transect #:	1

Hydraulic type:	Riffle	
Width:Mean Depth Ratio:	44.07	

Transect type:	P	
Stream width:	201	m
Number of stations:	10	

NOTES: * dfb = depth from bottom.

** at unsymmetrical sites, area is calculated from field measurements, not as site length * site width.

SITE WEIGHTED MEANS

Mean Depth:	0.3	m
Mean Velocity:	0.2	$m*s^{-1}$
Cross-sectional area :	3.4	m^2
Mean Probability (Fry):	71.5	%
Mean Probability (Parr):	67.8	%

ADJUSTED USABLE AREAS

Usable Width for Fry:	8.7	m
%Transect Usable by Fry	71.5	%
Usable Area for Fry	77.2	m^2
Usable Width Parr:	8.3	m
%Transect Usable by Parr	67.8	%
Usable Area for Parr	73.2	m^2

This spread sheet is designed for depth/velocity transect data collected within a closed electrofishing site.

DEPTH/ VELOCITY DATA FOR WEIGHTED USABLE AREA (WUA) CALCULATIONS

TRANSECT DATA											
Station (m)	Depth (m)	Velocity (m/s)	Cell Width (m)	Cell Mean Depth (m)	Cell Mean Velocity ($m*s^{-1}$)	Cell Prob. Fry	Usable Width Fry (m)	Cell Prob. Parr	Usable Width Parr (m)	Cell Area (m^2)	Cell Discharge (m^3*s^{-1})
0.00	0.08	0.00	1.70	0.130	0.040	0.85	1.4	0.12	0.20	0.221	0.00884
3.40	0.18	0.08	2.20	0.180	0.080	1.00	2.2	0.31	0.67	0.396	0.03168
4.40	0.20	0.11	0.70	0.200	0.110	1.00	0.7	0.44	0.31	0.140	0.01540
4.80	0.25	0.17	0.90	0.250	0.170	1.00	0.9	0.74	0.66	0.225	0.03825
6.20	0.28	0.30	1.65	0.280	0.300	0.63	1.0	0.97	1.60	0.462	0.13860
8.10	0.29	0.22	1.40	0.290	0.220	0.83	1.2	0.91	1.28	0.406	0.08932
9.00	0.38	0.20	0.95	0.380	0.200	0.58	0.6	0.90	0.86	0.361	0.07220
10.00	0.40	0.26	1.00	0.400	0.260	0.43	0.4	1.00	1.00	0.400	0.10400
11.00	0.44	0.35	1.10	0.440	0.350	0.21	0.2	1.00	1.10	0.484	0.16940
12.20	0.50	0.39	0.60	0.470	0.370	0.15	0.1	1.00	0.60	0.282	0.10434
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000

DEPTH/VELOCITY TRANSECT DATA ANALYSIS SPREADSHEET
(CALCULATES W.U.A. & DISCHARGE)

Spreadsheet modified by Willliamson Environemental Consulting, from one provided by Ron Ptolemy and Aquatic Resources Ltd.

This spreadsheet applies Ptolemy WUP HSI curves, February 12, 2001.

SITE SK18 Skeena River u/s Kitwanga

Stream:	Skeena	
Date:	99/10/12	
Mainstem/side-channel:	m	
Meter:	Marsh McBirney	
Metered at*:	40%	dfb
Transect width:	9.2	m

Site length:	10.3	m
Site width:	4.5	m
Site area**:	46.5	m^2
Discharge:	0.151	m^3*s^{-1}

UTM:	9.568345.6105933	
Watershed code:	400	
Site number:	SK18	
Transect #:	1	

Hydraulic type:	riffle
Width:Mean Depth Ratio:	56.65

Transect type:	P	
Stream width:	350	m
Number of stations:	10	

NOTES: * dfb = depth from bottom.
** at unsymmetrical sites, area is calculated from field measurements, not as site length * site width.

SITE WEIGHTED MEANS

Mean Depth:	0.2	m
Mean Velocity:	0.1	$m*s^{-1}$
Cross-sectional area :	1.5	m^2
Mean Probability (Fry):	88.8	%
Mean Probability (Parr):	30.1	%

ADJUSTED USABLE AREAS

Usable Width for Fry:	8.2	m
%Transect Usable by Fry	88.8	%
Usable Area for Fry	41.3	m^2
Usable Width Parr:	2.8	m
%Transect Usable by Parr	30.1	%
Usable Area for Parr	14.0	m^2

This spread sheet is designed for depth/velocity transect data collected within a closed electrofishing site.

DEPTH/ VELOCITY DATA FOR WEIGHTED USABLE AREA (WUA) CALCULATIONS

TRANSECT DATA											
Station (m)	Depth (m)	Velocity (m/s)	Cell Width (m)	Cell Mean Depth (m)	Cell Mean Velocity ($m*s^{-1}$)	Cell Prob. Fry	Usable Width Fry (m)	Cell Prob. Parr	Usable Width Parr (m)	Cell Area (m^2)	Cell Discharge (m^3*s^{-1})
0.00	0.10	0.15	0.75	0.110	0.120	1.00	0.8	0.24	0.18	0.083	0.00990
1.50	0.12	0.09	1.20	0.120	0.090	1.00	1.2	0.21	0.25	0.144	0.01296
2.40	0.12	0.19	1.00	0.120	0.190	1.00	1.0	0.37	0.37	0.120	0.02280
3.50	0.22	0.11	0.80	0.220	0.110	1.00	0.8	0.49	0.39	0.176	0.01936
4.00	0.24	0.01	0.75	0.240	0.010	0.50	0.4	0.04	0.03	0.180	0.00180
5.00	0.20	0.08	1.20	0.200	0.080	1.00	1.2	0.34	0.41	0.240	0.01920
6.40	0.15	0.01	1.20	0.150	0.010	0.50	0.6	0.03	0.03	0.180	0.00180
7.40	0.14	0.22	0.95	0.140	0.220	0.94	0.9	0.49	0.46	0.133	0.02926
8.30	0.19	0.15	0.90	0.190	0.150	1.00	0.9	0.55	0.49	0.171	0.02565
9.20	0.11	0.10	0.45	0.150	0.125	1.00	0.4	0.35	0.16	0.067	0.00844
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000

DEPTH/VELOCITY TRANSECT DATA ANALYSIS SPREADSHEET
(CALCULATES W.U.A. & DISCHARGE)

Spreadsheet modified by Willliamson Environemental Consulting, from one provided by Ron Ptolemy and Aquatic Resources Ltd.

This spreadsheet applies Ptolemy WUP HSI curves, February 12, 2001.

SITE SK19 Skeena River downstream of Kitwanga

Stream:	Skeena	
Date:	99/10/12	
Mainstem/side-channel:	m	
Meter:	Marsh McBirney	
Metered at*:	40%	dfb
Transect width:	15.7	m

UTM:	9.531412.6103676	
Watershed code:	400	
Site number:	SK19	
Transect #:	1	

Hydraulic type:	run	
Width:Mean Depth Ratio:	56.70	

Site length:	5.9	m
Site width:	7.1	m
Site area**:	41.9	m^2
Discharge:	0.600	m^3*s^{-1}

Transect type:	P	
Stream width:	230	m
Number of stations:	13	

NOTES: * dfb = depth from bottom.

** at unsymmetrical sites, area is calculated from field measurements, not as site length * site width.

SITE WEIGHTED MEANS		
Mean Depth:	0.3	m
Mean Velocity:	0.1	m*s^{-1}
Cross-sectional area :	4.3	m^2
Mean Probability (Fry):	69.0	%
Mean Probability (Parr):	51.3	%

ADJUSTED USABLE AREAS		
Usable Width for Fry:	10.8	m
%Transect Usable by Fry	69.0	%
Usable Area for Fry	28.9	m^2
Usable Width Parr:	8.1	m
%Transect Usable by Parr	51.3	%
Usable Area for Parr	21.5	m^2

This spread sheet is designed for depth/velocity transect data collected within a closed electrofishing site.

DEPTH/ VELOCITY DATA FOR WEIGHTED USABLE AREA (WUA) CALCULATIONS

TRANSECT DATA Station (m)	Depth (m)	Velocity (m/s)	Cell Width (m)	Cell Mean Depth (m)	Cell Mean Velocity (m*s^{-1})	Cell Prob. Fry	Usable Width Fry (m)	Cell Prob. Parr	Usable Width Parr (m)	Cell Area (m^2)	Cell Discharge (m^3*s^{-1})
0.00	0.14	0.06	0.60	0.180	0.035	0.80	0.5	0.12	0.07	0.108	0.00378
1.20	0.22	0.01	1.05	0.220	0.010	0.50	0.5	0.04	0.04	0.231	0.00231
2.10	0.33	0.23	0.95	0.330	0.230	0.69	0.7	0.95	0.90	0.314	0.07211
3.10	0.41	0.03	0.85	0.410	0.030	0.38	0.3	0.18	0.15	0.349	0.01046
3.80	0.47	0.17	0.80	0.470	0.170	0.33	0.3	0.81	0.65	0.376	0.06392
4.70	0.45	0.15	1.10	0.450	0.150	0.38	0.4	0.75	0.83	0.495	0.07425
6.00	0.35	0.05	1.25	0.350	0.050	0.61	0.8	0.30	0.38	0.438	0.02188
7.20	0.37	0.12	1.65	0.370	0.120	0.62	1.0	0.63	1.04	0.611	0.07326
9.30	0.19	0.35	2.00	0.190	0.350	0.52	1.0	0.73	1.46	0.380	0.13300
11.20	0.19	0.13	1.55	0.190	0.130	1.00	1.6	0.49	0.76	0.295	0.03829
12.40	0.13	0.15	1.35	0.130	0.150	1.00	1.4	0.35	0.47	0.176	0.02633
13.90	0.20	0.07	1.65	0.200	0.070	1.00	1.7	0.30	0.50	0.330	0.02310
15.70	0.35	0.39	0.90	0.275	0.230	0.87	0.8	0.91	0.82	0.248	0.05693
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000

DEPTH/VELOCITY TRANSECT DATA ANALYSIS SPREADSHEET
(CALCULATES W.U.A. & DISCHARGE)

Spreadsheet modified by Willliamson Environemental Consulting, from one provided by Ron Ptolemy and Aquatic Resources Ltd.

This spreadsheet applies Ptolemy WUP HSI curves, February 12, 2001.

SITE SK20 Skeena River at Insect Creek

Stream:	Skeena	
Date:	99/10/12	
Mainstem/side-channel:	m	
Meter:	Marsh McBirney	
Metered at*:	40%	dfb
Transect width:	12.3	m

UTM:	9.541678.6094049
Watershed code:	400
Site number:	SK20
Transect #:	1

Hydraulic type:	run
Width:Mean Depth Ratio:	51.63

Site length:	14.0	m
Site width:	7.6	m
Site area**:	106.4	m^2
Discharge:	0.510	m^3*s^{-1}

Transect type:	P	
Stream width:	277	m
Number of stations:	12	

NOTES: * dfb = depth from bottom.
** at unsymmetrical sites, area is calculated from field measurements, not as site length * site width.

SITE WEIGHTED MEANS

Mean Depth:	0.2	m
Mean Velocity:	0.2	$m*s^{-1}$
Cross-sectional area :	2.9	m^2
Mean Probability (Fry):	49.7	%
Mean Probability (Parr):	37.7	%

ADJUSTED USABLE AREAS

Usable Width for Fry:	6.1	m
%Transect Usable by Fry	49.7	%
Usable Area for Fry	52.9	m^2
Usable Width Parr:	4.6	m
%Transect Usable by Parr	37.7	%
Usable Area for Parr	40.1	m^2

This spread sheet is designed for depth/velocity transect data collected within a closed electrofishing site.

DEPTH/ VELOCITY DATA FOR WEIGHTED USABLE AREA (WUA) CALCULATIONS

TRANSECT DATA											
Station (m)	Depth (m)	Velocity (m/s)	Cell Width (m)	Cell Mean Depth (m)	Cell Mean Velocity ($m*s^{-1}$)	Cell Prob. Fry	Usable Width Fry (m)	Cell Prob. Parr	Usable Width Parr (m)	Cell Area (m^2)	Cell Discharge (m^3*s^{-1})
0.00	0.00	0.00	0.35	0.040	0.000	0.19	0.1	0.00	0.00	0.014	0.00000
0.70	0.08	0.00	1.00	0.080	0.000	0.20	0.2	0.00	0.00	0.080	0.00000
2.00	0.15	0.01	1.20	0.150	0.010	0.50	0.6	0.03	0.03	0.180	0.00180
3.10	0.12	0.00	1.05	0.120	0.000	0.20	0.2	0.00	0.00	0.126	0.00000
4.10	0.16	0.03	1.15	0.160	0.030	0.80	0.9	0.11	0.12	0.184	0.00552
5.40	0.22	0.02	1.10	0.220	0.020	0.70	0.8	0.09	0.10	0.242	0.00484
6.30	0.18	0.02	0.90	0.180	0.020	0.70	0.6	0.07	0.07	0.162	0.00324
7.20	0.29	0.03	1.00	0.290	0.030	0.70	0.7	0.17	0.17	0.290	0.00870
8.30	0.27	0.19	1.25	0.270	0.190	0.95	1.2	0.83	1.03	0.338	0.06413
9.70	0.46	0.18	1.20	0.460	0.180	0.35	0.4	0.84	1.01	0.552	0.09936
10.70	0.35	0.42	1.30	0.350	0.420	0.20	0.3	1.00	1.30	0.455	0.19110
12.30	0.42	0.43	0.80	0.385	0.425	0.17	0.1	1.00	0.80	0.308	0.13090
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000
			0.00	0.000	0.000	0.00	0.0	0.00	0.00	0.000	0.00000

7.5 Appendix 5. Kispiox and Skeena River Age Data

Appendix 5. Table 1. Fork length-at-age for 1999 Kispiox River scale samples.

		Forklength at Age						
Site	Name	Steelhead	Steelhead	Steelhead	Chinook	Chinook	Chinook	Coho
		0+	1+	2+	0+	1+	2+	0+
K5	Upper Kispiox Forest Rec Site		87	96				
K6	Upstream Mitten Bridge						62	
K8	Date Creek Upstream Bridge		73	93				
K10	Upper McCully #2		87					55
			83	97				
		39	75	132		58		
			79	107				46
		46	82	145				
K11	Upstream Bridge on Lower Cullon			93				
				113				
				97				
				73				
K12	Upper Cullon			90				
				79				
				73				
				90				
				79				
				73				
				92				
				84				
K13	Downstream Bridge Ironside Creek	44						
		49						
K15	Downstream Clifford Culvert		70	122				
				95				
				98				
				105				
				100				
K17	Nangeese River Bridge		82					
Mean Forklength (n)		46.0 (5)	79.8 (9)	99.2 (20)	54.0 (1)	61.5 (4)		50.5 (2)

Appendix 5. Table 2. Age-at-age for 1999 Skeena River scale samples.

		Forklength at Age						
Site	Name	Steelhead	Steelhead	Steelhead	Chinook	Chinook	Chinook	Coho
		0+	1+	2+	0+	1+	2+	0+
SK3	22 km downstream Kluatantan River				128			
SK8	Canyon Creek			111				
				111	163			
			82	124				
			91	123				
SK9	Downstream Canyon Creek		86	144				
			77	127				
				92				
Sk10	Downstream Sicintine			137				
SK12	Upstream of Babine Confluence		76	94				
			90					
			80					
			80					
SK13	Acrross from Salmon River			75			72	
				84				
				75				
				102				
				76				
				94				
				96				
				135				
SK18	Upstream of Kitwanga #1		84	115	136			
Mean Forklength (n)			82.88 (9)	106.39 (18)	142.33 (3)		72 (1)	

7.6 Appendix 6. Historical Kispiox Data

Appendix 6. Table 1. Steelhead fry, parr and char density estimates for Kispiox River index sites used in 1999. Estimates are from the period, 1980-1987 and 1999.

			Density #/100 m^2			Density #/100 m^2			Density #/100 m^2			Density #/100 m^2			Density #/100 m^2			Density #/100 m^2			Density #/100 m^2		
Site	Old Site Code		Fry	Parr	Charr	Fry	Parr	Charr	Fry	Parr	Charr	Fry	Parr	Charr	Fry	Parr	Charr	Fry	Parr	Charr	Fry	Parr	Charr
		MAINSTEM																					
k1		Downstream Kispiox Village																					
k2	2	Mainstem @ Potato Patch	12	5	5	71	5	0	18	3	0	66	6	0	53	7	1	51	5	2	101	5	0
k3	3	Mainstem @ Rodeo Grounds	24	13	0																0	0	0
k4	4	Upstream 17 mile Bridge																			0	0	0
k5		Upper Kispiox Forest Rec Site							21	17	0												
k6		Upstream Mitten Bridge				27	7	12	11	5	8	24	4	4				190	30	42	391	4	71
k7		Kispiox Sweetin Confluence							26	8	7	0	0	0	247	1	31	56	1	14	111	0	18
k14		Mainstem Downstream Corral Creek							0	0	0												
		TRIBUTARIES																					
k8	ss1	Date Creek Upstream Bridge	2	6	10	0	5	14	0	12	26	3	9	6	12	19	18	0	2	3	5	1	8
k9	ss1	McCully Upstream Bridge #1	5	10	60				0	10	111	56	9	18				20	4	20	39	5	40
k10	ss2	Upper McCully #2	7	8	36	83	6	22	9	16	36	67	7	43	27	6	9	14	3	18	91	13	19
k11	ss1	Upstream Bridge on Lower Cullon	362	8	31				337	41	35	78	0	0	0	0	0	259	145	150	540	5	175
k12	ss3	Upper Cullon	64	8	20	67	68	2	15	124	16	18	20	1	24	9	0	55	36	2	349	77	0
k13	ss1	Downstream Bridge Ironside Creek	0	0	12	15	0	3	0	14	313	34	2	11									
k15	ss1	Downstream Clifford Culvert	69	21	90	184	0	47	0	42	107												
k16	ss1	Downstream Sweetin river Bridge	0	1	9																		
k17	ss3	Nangeese River Bridge	26	1	44							2	2	32									
k18	ss5	Upper Nangeese	0.4	0.4	9					1	107	7	4	61	0	0	29	0	0	60			

Appendix 6. Table 2. Steelhead fry, parr and char biomass estimates for Kispiox River index sites used in 1999. Estimates are from the period, 1980-1987 and 1999.

			1980			1981			1982			1983			1985			1986			1987		
			g /100 m^2			g /100 m^2			g /100 m^2			g /100 m^2			g /100 m^2			g /100 m^2			g /100 m^2		
Site	Old Site Code		Fry	Parr	Charr	Fry	Parr	Charr	Fry	Parr	Charr	Fry	Parr	Charr	Fry	Parr	Charr	Fry	Parr	Charr	Fry	Parr	Charr
		MAINSTEM																					
k1		Downstream Kispiox Village																					
k2	2	Mainstem @ Potato Patch	24	86	0	39	30	0	11	11	0	39	34	0	21	41	1	20	21	1	44	23	0
k3	3	Mainstem @ Rodeo Grounds	19	139	0																0	0	0
k4	4	Upstream 17 mile Bridge																			0	0	0
k5		Upper Kispiox Forest Rec Site																					
k6		Upstream Mitten Bridge				17	55	23	10	20	5	22	31	9				89	11	29	150	11	33
k7		Kispiox Sweetin Confluence							12	39	37	0	0	0	98	4	56	20	3	18	50	0	8
k14		Mainstem Downstream Corral Creek																					
		TRIBUTARIES																					
k8	ss1	Date Creek Upstream Bridge	0.4	55	25	0	59	19	0	346	135	1	196	57	4	548		0	31	20	1	35	26
k9	ss1	McCully Upstream Bridge #1	3	130	39				0	137	111	44	129	105				105	52	120	20	17	28
k10	ss2	Upper McCully #2	4	61	34	29	56	23	3	161	34	43	113	98	10	56	40	5	22	143	36	180	96
k11	ss1	Upstream Bridge on Lower Cullon	253	45	38				208	276	35	78	0	0	0	0	0	162	1680	566	370	28	230
k12	ss3	Upper Cullon	68	49	3	66	614	2	20	947	207	21	200	3	41	208	0	52	432	14	238	826	0
k13	ss1	Downstream Bridge Ironside Creek	0	0	85	8	0	2	0	76	550	26	18	12									
k15	ss1	Downstream Clifford Culvert	43	121	152	103	0	41	0	290	172												
k16	ss1	Downstream Sweetin river Bridge	0	16	6																		
k17	ss3	Nangeese River Bridge	18	9	58							1	7	86									
k18	ss5	Upper Nangeese	0.1	2	11				0	40	135	3	30	162	0	0	32	0	0	28			

Appendix 6. Table 3. Kispiox River and tributaries historical fish per unit (FPU) estimates, with weighted useable area (WUA) corrected densities. (Data provided by Ron Ptolemy, MWLAP, Victoria).

Stream	Year	Reach	Site	Species	Fish/ 100 m^2 (FPU)	Weighted usable Area (WUA) (%)	Adjusted FPU	Geometric mean FPU
Kispiox River	1980		1 Campsite	Rb (0+)	0.0			
			seine	Rb (1+)	0.0			
			2 Rodeo	Rb (0+)	24.0	70	34	
				Rb (1+)	10.0			
			3 Potato	Rb (0+)	12.0	50	24	
				Rb (1+)	4.0			
			4	Rb (0+)	27.0	80	34	
				Rb (1+)	8.0			
			5 Mitten	Rb (0+)	0.0			30
			seine	Rb (1+)	0.0			
Kispiox River	1981		5 Mitten	Rb (0+)	27.0	60	45	
				Rb (1+)	5.0			
				Rb (2+)	2.0			
			2 Rodeo	Rb (0+)	0.5			
			3 Potatoes	Rb (0+)	71.0	60	118	
				Rb (1+)	5.0			
			1 Campsite	Rb (0+)	48.0	50	96	
				Rb (1+)	6.0			
			6 Cottonwood	Rb (0+)	143.0	100	143	92
				Rb (1+)	5.0			
Cullon Creek	1981		1	Rb (0+)	337.0	100	337	
				Rb (1+)	32.0			
				Rb (2+)	9.0			
			2	Rb (0+)	294.0	80	368	
				Rb (1+)	37.0			
				Rb (2+)	5.0			
			3	Rb (0+)	15.0	10	150	265
				Rb (1+)	101.0			
				Rb (2+)	15.0			
McCully Creek	1981		2	Rb (0+)	83.0			
				Rb (1+)	5.0			
				Rb (2+)	1.0			
				Rb (3+)	0.3			
			Cottonwood	Rb (0+)	35.0	90	39	
				Rb (1+)	19.0			
			Mitten	Rb (0+)	11.0	50	22	
				Rb (1+)	5.0			
			Sweetin	Rb (0+)	26.0	80	33	30

Stream	Year	Reach	Site	Species	Fish/ 100 m^2 (FPU)	Weighted usable Area (WUA) (%)	Adjusted FPU	Geometric mean FPU
				Rb (1+)	8.0			
Cullon Creek	1982	1		Rb (0+)	337.0	100	337	
				Rb (1+)	32.0			
				Rb (2+)	9.0			
		2		Rb (0+)	294.0	80	368	
				Rb (1+)	37.0			
				Rb (2+)	5.0			
		3		Rb (0+)	15.0	10	150	265
				Rb (1+)	101.0			
				Rb (2+)	15.0			
				Rb (3+)	8.0			
Kispiox River	1982	Campsite		Rb (0+)	21.0	50	42	
				Rb (1+)	17.0			
		Potato		Rb (0+)	18.0	50	36	39
Cullon Creek	1983		1	Rb (0+)	39.0	20	195	
			2	Rb (0+)	78.0	90	87	
			3	Rb (0+)	18.0	10	180	
				Rb (1+)	11.0			
				Rb (2+)	6.0			
				Rb (3+)	3.0			145
Kispiox River	1983		Cottonwood	Rb (0+)	100.0	80	125	
				Rb (1+)	13.0			
			Potatoes	Rb (0+)	66.0	60	110	
				Rb (1+)	6.0			
			Mitten	Rb (0+)	24.0	40	60	
				Rb (1+)	3.0			
			Lodge	Rb (0+)	92.0	60	153	
				Rb (1+)	12.0			106
Kispiox	1984		Lodge	Rb (0+)	24.2	40	61	
				Rb (1+)	29.5			
				Rb (2+)	2.4			
			Potato	Rb (0+)	37.3	50	75	
				Rb (1+)	11.3			
				Rb (2+)	0.5			
			Cottonwood SC	Rb (0+)	78.5	90	87	
				Rb (1+)	10.8			
				Rb (2+)	0.7			
			Mitten	Rb (0+)	27.3	30	91	
				Rb (2+)	0.8			
			Sweetin	Rb (0+)	39.4	40	99	81
Cullon Creek	1984	Fast Glide	3	Rb (0+)	7.0	20	35	
				Rb (1+)	21.7			
				Rb (2+)	6.9			
				Rb (3+)	0.9			
		G/R Side channel	2	Rb (0+)	11.0	80	14	

Stream	Year	Reach	Site	Species	Fish/ 100 m^2 (FPU)	Weighted usable Area (WUA) (%)	Adjusted FPU	Geometric mean FPU
				Rb (1+)	5.5			
		Glide	1a	Rb (0+)	51.0	30	170	
				Rb (1+)	10.2			
		Riffle	1b	Rb (0+)	55.0	20	275	69
Kispiox River	1985		1	Rb (0+)	53.0	40	133	
			Potato	Rb (1+)	6.0			
				Rb (2+)	1.0			
			2	Rb (0+)	133.0	40	333	
			Lodge	Rb (1+)	14.0			
			3 "Cottonwood"	Rb (0+)	303.0	100	303	
			4	Rb (0+)	108.0	60	180	
			Sweetin	Rb (1+)	1.0			
			5	Rb (0+)	4.0	5	80	221
Cullon Creek	1985		1	Rb (0+)	362.0			
				Rb (1+)	30.0			
			3	Rb (0+)	24.0			
				Rb (1+)	6.0			
				Rb (2+)	3.0			
Kispiox River	1986		Potato	Rb (0+)	51.0	58.7	87	
				Rb (1+)	5.0	89.3		
			Lodge	Rb (0+)	89.0	24	371	
				Rb (1+)	32.0	62		
			Cottonwood	Rb (0+)	176.0	85.5	206	
				Rb (1+)	28.0	25.6		
			Sweetin	Rb (0+)	56.0	50.3	111	
				Rb (1+)	1.0	54.1		
			Mitten	Rb (0+)	190.0	59.6	319	
				Rb (1+)	3.0			
			near Stephens	Rb (1+)	4.0			188
Cullon Creek	1986		1	Rb (0+)	620.0	100	620	
				Rb (1+)	19.0			
			2	Rb (0+)	259.0	100	259	
				Rb (1+)	82.0			
				Rb (2+)	54.0			
				Rb(3+)	4.0			
				Rb(4+)	5.0			
			3	Rb (0+)	55.0	100	55	
				Rb (1+)	22.0			
				Rb (2+)	13.0			
				Rb(3+)	1.0			207
Kispiox River	1987		1	Rb (0+)	101.0	40	253	
			Patch	Rb (1+)	5.3			
			2	Rb (0+)	134.0	55	244	
			Lodge	Rb (1+)	17.0			
			4 "Mitten"	Rb (0+)	111.0	60	185	

Stream	Year	Reach	Site	Species	Fish/ 100 m^2 (FPU)	Weighted usable Area (WUA) (%)	Adjusted FPU	Geometric mean FPU
			5	Rb (0+)	391.0	80	489	
			d/s Sweetin	Rb (1+)	4.0			273
Cullon	1987		1	Rb (0+)	777.0		777	
			2	Rb (0+)	540.0		540	
				Rb (1+)	5.0			
				DV(0+)	138.0			
				DV(1+)	37.0			
			3	Rb (0+)	349.0		349	
				Rb (1+)	74.0			
				Rb (2+)	2.8			527
Date	1987		1	Rb (0+)	5.0			
				Rb (3+)	1.0			
McCully	1987		1	Rb (0+)	39.0			
				Rb (1+)	5.0			
			2	Rb (0+)	91.0			
				Rb (1+)	9.0			
Kispiox River	1988		14	Rb (0+)	54.0	74.7	72	
				Rb (1+)	15.0	35.5		
				Rb (2+)	2.0			
			70	Rb (0+)	108.0	65.9	164	
			85	Rb (0+)	135.0	53.8	251	
				Rb (1+)	5.0	38.5		
			152	Rb (0+)	372.0	80	465	
				Rb (1+)	5.0			
			202	Rb (0+)	143.0	47.1	304	
				Rb (1+)	11.0			
			267	Rb (0+)	89.0	66.8	133	
				Rb (1+)	10.0			
			345	Rb (0+)	69.0	37	186	
				Rb (1+)	3.0	53.5		
			390	Rb (0+)	282.0	100	282	
				Rb (1+)	1.0			
			490	Rb (0+)	60.0	27	222	
				Rb (1+)	8.0			
			700	Rb (0+)	180.0	75.4	239	
				Rb (1+)	3.0	48.1		
			725	Rb (0+)	258.0	87	297	
				Rb (1+)	10.7			215
Cullon Creek	1988		1	Rb (0+)	156.0	91.4	171	
				Rb (1+)	14.0	33.6		
			2	Rb (0+)	89.0	44	202	
				Rb (1+)	4.8	43.4		186
McCully Creek	1988		16	Rb (0+)	35.0	25.3	138	
				Rb (1+)	10.0	60.5		
				Rb (2+)	1.4			

Stream	Year	Reach	Site	Species	Fish/ 100 m^2 (FPU)	Weighted usable Area (WUA) (%)	Adjusted FPU	Geometric mean FPU
				Rb (2+)	4.0			138
Kispiox River	1990		9	Rb (0+)	44.0	94.5	47	
			70	Rb (0+)	62.0	77.4	80	
				Rb (1+)	4.4	6.7		
			140	Rb (0+)	97.0	24.8	391	
			151	Rb (0+)	194.0	63.2	307	
				Rb (1+)	7.5	17		
			202	Rb (0+)	184.0	78.8	234	
			267	Rb (0+)	129.0	85.8	150	
				Rb (1+)	12.7	13.8		
			345	Rb (0+)	102.0	81.5	125	
			390	Rb (0+)	90.0	74.2	121	
			490	Rb (0+)	13.0	70	19	
				Rb (1+)	7.6			
			685	Rb (0+)	99.0	56.1	176	
				Rb (1+)	27.0			
			700	Rb (0+)	44.0	47.4	93	
				Rb (1+)	1.1			
			725	Rb (0+)	135.0	60.4	224	126
Cullon Creek	1990		1	Rb (0+)	268.0	60.1	446	446
				Rb (1+)	12.0			
McCully Creek	1990		16	Rb (0+)	1.0	71.7		
				Rb (1+)	10.2			
				Rb (2+)	4.1			
McCully Creek	1990		57	Rb (0+)	42.0	62.1	68	68
				Rb (1+)	17.6			
				Rb (2+)	1.5			
Kispiox River	1991		70	Rb (0+)	101.0	56.3	179	
				Rb (1+)	4.2	59.8		
			151	Rb (0+)	80.0	76.3	105	
				Rb (1+)	2.3	25.4		
			202	Rb (0+)	140.0	54.8	255	
				Rb (1+)	2.7	42.9		
			267	Rb (0+)	77.0	38.8	198	
				Rb (1+)	8.5	61.4		
				Rb (2+)	0.2			
			490	Rb (0+)	9.0	57.3	16	
				Rb (1+)	9.5	21.5		
				Rb (2+)	3.2	21.5		
			345	Rb (0+)	138.0	75.6	183	
			390	Rb (0+)	66.0	92.5	71	
			685	Rb (0+)	144.0	71.1	203	
				Rb (1+)	11.1	12.2		
			700	Rb (0+)	55.0	42.3	130	
			725	Rb (0+)	58.0	42.9	135	121

Stream	Year	Reach	Site	Species	Fish/ 100 m^2 (FPU)	Weighted usable Area (WUA) (%)	Adjusted FPU	Geometric mean FPU
McCully Creek	1991		lower	Rb (0+)	29.0	55.8	52	
				Rb (1+)	4.4	61.5		
			upper	Rb (0+)	30.0	57.3	52	
				Rb (1+)	4.8	60.8		
				Rb (2+)	1.0			
				Rb(3+)	0.5			52
Cullon Creek	1991		1	Rb (0+)	203.0	42.3	480	480
Sweetin River	1991		30	Rb (0+)	55.0	61.4	90	90
Kispiox	1999		9	Rb (0+)	14.5	62.8	23	
			70	Rb (0+)	36.7	82	45	
				Rb (1+)	4.9	31.2		
			140	Rb (0+)	125.0	43.4	288	
				Rb (1+)	2.0	48		
			151	Rb (0+)	75.6	68.7	110	
			267	Rb (0+)	50.0	60.9	82	
				Rb (1+)	3.9	48.1		
			490	Rb (0+)	29.4	73.5	40	
				Rb (1+)	1.5	26.4		
			725	Rb (0+)	67.5	41.1	164	
				Rb (1+)	2.8	47.1		
			685	Rb (0+)	144.0	49.2	293	
				Rb (1+)	1.6	32		92
Cullon	1999		K11	Rb (0+)	77.5	64.5	120	120
			K12	Rb (0+)	114.0	83.7	136	136
				Rb (1+)	16.4			

Appendix 6. Table 4. Historical steelhead juvenile survey dates on the Kispiox River. (Data provided by Ron Ptolemy, MWLAP, Victoria).

Year	Dates
1980	August 29-
1981	August 20-21
1982	August 19-21
1983	August 29-September 1
1984	August 20-23
1985	August 19-28
1986	August 11-15
1987	August 10-12
1988	August 29-September 1
1990	August 27-30
1991	September 9-12
1999	September 15-25