



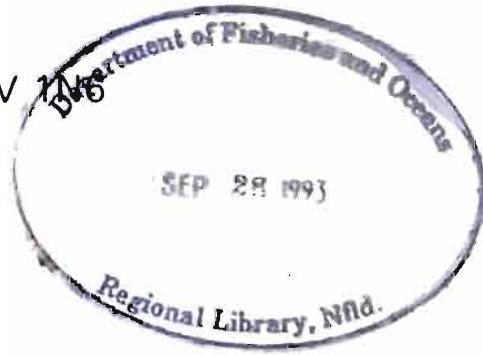
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Swimming Speeds and Distribution of Underyearling Chinook Salmon (*Oncorhynchus* *tshawytscha*) in Response to Hypoxia and Simulated Riverine and Estuarine Conditions

G.E. Piercy, I.K. Birtwell, J.S. Korstrom, G.M. Kruzyński,
and S. Spohn

Department of Fisheries and Oceans
Biological Sciences Branch
West Vancouver Laboratory
4160 Marine Drive
West Vancouver, British Columbia V7V 1Z6

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Canadian Data Report of Fisheries and Aquatic Sciences

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SWIMMING SPEEDS AND DISTRIBUTION OF
UNDERYEARLING CHINOOK SALMON (ONCORHYNCHUS TSHAWYTSCHA) IN
RESPONSE TO HYPOXIA AND SIMULATED RIVERINE AND
ESTUARINE CONDITIONS.

by

G.E. Piercey, I.K. Birtwell, J.S. Korstrom,
G.M. Kruzynski and S. Spohn

Department of Fisheries and Oceans
Biological Sciences Branch
Salmon Habitat Section
West Vancouver Laboratory
4160 Marine Drive
West Vancouver
British Columbia V7V 1N6

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ABSTRACT

Piercey, G.E., I.K. Birtwell, J.S. Korstrom, G.M. Kruzynski, and S. Spohn. 1992. Swimming speeds and distribution of underyearling chinook salmon (Oncorhynchus tshawytscha) in response to hypoxia and simulated riverine and estuarine conditions. Can. Data Rep. Fish. Aquat. Sci. 889. 56 p.

This study examined the behavioural responses of juvenile chinook salmon (O. tshawytscha) in riverine and vertically stratified estuarine conditions, and to hypoxia within a Water Column Simulator.

Swimming speeds, schooling behaviour and distribution were quantified in relation to the simulated conditions through the analysis of time-lapse video tape recordings. Temporal changes were examined by conducting a series of experiments encompassing the period of natural downstream migration, estuarine residence, and entry into sea water.

This report presents data generated from these analyses together with graphical examples of the responses of underyearling salmon to the imposed conditions.

Key words: chinook salmon (Oncorhynchus tshawytscha), behavioural responses, swimming speeds, schooling, simulated environmental conditions, hypoxia

RÉSUMÉ

Piercey, G.E., I.K. Birtwell, J.S. Korstrom, G.M. Kruzynski, and S. Spohn. 1992. Swimming speeds and distribution of underyearling chinook salmon (Oncorhynchus tshawytscha) in response to hypoxia and simulated riverine and estuarine conditions. Can. Data Rep. Fish. Aquat. Sci. 889. 56 p

Pendant cette étude, on a examiné la réponse comportementale des saumons quinnats (O. tshawytscha) juvéniles au moyen d'un simulateur de colonne d'eau, reproduisant les conditions des eaux des rivières et des estuaires à stratification verticale, ainsi que leur réaction à l'hypoxémie.

On a quantifié les vitesses de déplacement, le comportement de

rassemblement en bancs et la répartition des poissons par rapport aux conditions de simulation en analysant des enregistrements vidéos image par image. On a étudié les changements d'ordre temporel au cours d'une série d'expériences tenant compte de la durée de la migration naturelle en aval, du temps de séjour dans les estuaires et du moment de pénétrer dans l'eau de mer.

Ce rapport fournit des données de cas analyses ainsi que des graphiques des réactions des alevins de moins d'un an aux conditions simulées.

Mots Clés: saumon quinnat (Oncorhynchus tshawytscha), réponses comportementales, vitesses de déplacement, rassemblement en bancs, conditions environnementales simulées, hypoxémie.

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INTRODUCTION

The behaviour of fish is inherently linked to their survival, and understanding how such behaviour may be affected by contaminants and natural variables will permit better management of resources.

Little information is available on the behaviour of juvenile salmon during their migration to sea (Mace 1983, Piercy et al. 1985, Macdonald et al. 1987). Since observations under field conditions are often difficult (Macdonald et al. 1987, Gregory 1991) we have developed a Water Column Simulator to facilitate behavioural observations in the laboratory under conditions which mimic those in nature (Birtwell and Kruzyński 1987, 1989).

This study was a component of a research program designed to examine the significance of sublethal effects of contaminants on the survival of salmon. The initial objective was to obtain baseline data on the behaviour of underyearling chinook salmon in fresh water, on their responses to increasing salinity and vertically stratified estuarine conditions (fresh water overlying salt water). Responses to variation in dissolved oxygen in the overlying freshwater layer were also examined. We chose a stock of fish from the Harrison River because of their documented fidelity to prolonged rearing in the Fraser River estuary prior to entry into sea water -- a trait that could subject them to diverse habitat quality (Levy and Northcote 1982).

A series of experiments was conducted in the spring and early summer of 1985 and 1991 to determine if the size (age) of individuals affected their behaviour under the simulated conditions. By carrying out experiments during the time that these fish would normally be migrating to the Fraser River estuary and then to sea water, we attempted to quantify the volitional aspects of fish behaviour relating to sea water adaptation. A detailed analysis of results will be reported elsewhere.

MATERIALS AND METHODS

Apparatus

The apparatus (Water Column Simulator, 'WCS'), has been described elsewhere (Birtwell and Kruzyński 1987) and only a brief mention will be made of the significant components. The WCS consists of a 4500-L acrylic aquarium (2.4 x 2.4 x 0.8 m), with three separate water delivery and mixing loops, which facilitate the

formation of a water column comprising a maximum of three distinct vertical zones (top, middle and bottom); salinity, dissolved oxygen, temperature and water velocity can be varied within each zone. Lighting is provided by a metal halide light source with seasonal photoperiod control.

Physico-chemical parameters are monitored continuously. A high resolution camera with peak sensitivity in the near infra-red coupled to a time lapse video recorder monitors fish movements. For a detailed description of operating methods refer to Spohn et al. 1992 (in prep).

Experimental protocol

Experiments were carried out using juvenile chinook salmon from Harrison River stock (Fraser River system) which had been reared at the Department of Fisheries and Oceans' Chilliwack River Hatchery. An additional experiment (Expt 1991-07) using 'wild' juvenile chinook salmon from the Harrison River was effected in 1991. All fish were held in an outdoor aquarium facility and supplied with air-equilibrated fresh (well) water prior to experimentation.

We examined the behavioural responses and swimming speeds of these fish under riverine (all three zones fresh water), brackish water transition (during salt water addition), and vertically stratified estuarine conditions (uppermost zone freshwater, a well-defined halocline, bottom two zones salt water) and to hypoxia in the fresh water zone. A brief description of the experimental protocol is provided below (only minor variations in this protocol occurred between 1985 and 1991).

Day 1 experimental fish segregated and held within stock tanks

Day 3 twenty juvenile chinook transferred to simulated riverine conditions in the WCS

Day 4 swimming speeds ($n=30$) * determined under riverine conditions

Day 5 transition to estuarine conditions: salt water introduced to bottom 2 zones of WCS

swimming speeds ($n=30$) * determined during transition (brackish water) period

swimming speeds ($n=30$) * examined under estuarine conditions

Day 6 imposition of hypoxic conditions in fresh water zone, under estuarine conditions

swimming speeds ($n=104$)^{*} determined during hypoxic conditions

termination of experiment: fish removed for length and weight determinations

* 1991 only

The video tapes from each experiment were analysed to reveal the position and distribution of fish. Analyses focussed on periods of similar environmental conditions to facilitate comparisons.

Swimming speeds

The path of randomly-chosen individual fish were traced on transparent sheets superimposed on the video monitor screen for a predetermined time (30 or 60 s). The distances travelled (in the horizontal and vertical planes) were measured and the results scaled to equate to distances within the WCS. Swimming speeds ($\text{cm}\cdot\text{s}^{-1}$, body lengths $\cdot\text{s}^{-1}$) were determined under the following conditions: riverine (stable fresh water 'FW ST'), during transition to estuarine conditions (salt water addition 'SW ADD'), under stable estuarine conditions (stable salt water 'SW ST', fresh water overlying salt water), and during the imposition of hypoxia in the fresh water zone (dissolved oxygen reduction 'DO2 RED'). The swimming speed of fish at different vertical locations in the water column were determined.

School positions

The approximate area and position of the fish 'school' were determined by using a custom software package 'SNAP' developed by SciTech Consultants of Vancouver, B.C. This program incorporates an image capture and analysis procedure, in which the locations of individual fish are digitized during a review of video tapes. The mean and median school positions are calculated relative to a coordinate system for which the WCS is divided into four cells (see Figure 1). Under stratified conditions the position of the halocline establishes the horizontal boundary between the upper and lower cells. These cells are bisected in the vertical plane to produce the four cells depicted in Figure 1. Standard deviation values for the mean school positions were calculated together with the angle which the school deviates from the vertical (denoted by θ). Figure 1 is an example of the image analysis output.

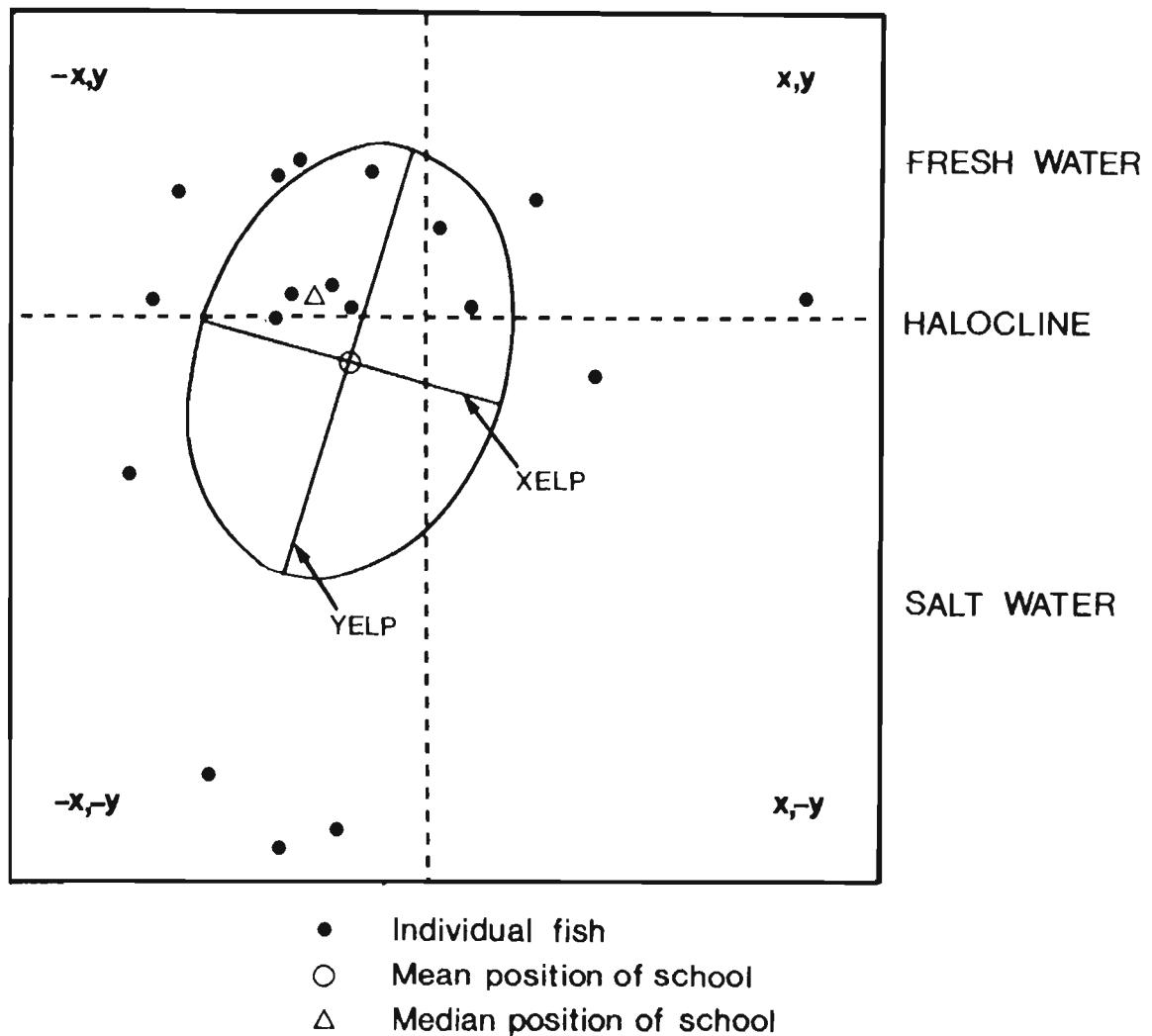


Figure 1. An example of the digitized location of individual fish and the elliptical school boundary (based on one standard deviation from the mean) produced by the 'SNAP' software program. Expt. 1985-03 24 April 1500 h under vertically stratified conditions with fresh water overlying salt water. The rectangular boundary represents the WCS aquarium; x,y coordinates are used in the determination of fish position (at intersection of dashed lines $x=0, y=0$).

RESULTS AND DISCUSSION

The data obtained in this component of the study are listed in Tables 1, 2 and 3 under a number of abbreviated subject headings, which are described below.

Table 1. Swimming speeds of juvenile chinook salmon determined during simulated conditions: riverine (stable fresh water 'FW ST'), brackish water transition (salt water addition 'SW ADD'), stable stratified estuarine conditions (stable salt water 'SW ST'), and hypoxia in the fresh water zone (dissolved oxygen reduction 'DO2 RED'). Swimming speeds are expressed as $\text{cm}\cdot\text{s}^{-1}$ and $\text{blen}\cdot\text{s}^{-1}$ (body lengths per second). All percentage values were transformed (arcsine square root) prior to calculation of means and standard deviations.

TIME	start time of observation
FISH NO.	consecutive numbering system
TOP DO2	dissolved oxygen ($\text{mg}\cdot\text{L}^{-1}$) in the top zone of the WCS, presented only for periods of hypoxia
CM	distance travelled within zones
S	duration of residency in zones (seconds)
$\text{CM}\cdot\text{s}^{-1}$	speed of each individual fish in specific zones
$\text{BLEN}\cdot\text{s}^{-1}$	body lengths per second, calculated from mean body length of experimental fish and distance travelled
% TOP	percent of time the individual fish spent in the top zone
TOT DIST	total distance (cm) travelled in 60 seconds
TOT OBS	total observation time (s)
OVERALL SPEED	
$\text{CM}\cdot\text{s}^{-1}$	speed of each fish, zones combined
$\text{BLEN}\cdot\text{s}^{-1}$	standardized speed of each fish, zones combined

MEAN	average, zero values only included in calculation of percent time spent in specific zones
S.D.	sample standard deviation ('n-1' degrees of freedom)
MIN	minimum non-zero value
MAX	maximum value

Table 2. Distributions of juvenile chinook salmon in the WCS during 1985 and 1991. Analyses produced by the 'SNAP' software program, under the same conditions presented in Table 1.

EXPT	experiment number
DATE	year, month, day
START	time (h) of start of observation period (used to uniquely identify images)
N	number of fish located in image (maximum of 20)
SIMCOND	simulated environmental condition: riverine (stable fresh water 'FW ST'), during transition to estuarine conditions (salt water addition 'SW ADD'), under stable estuarine conditions (stable salt water 'SW ST'), and during the imposition of hypoxia in the fresh water zone (dissolved oxygen reduction 'DO2 RED')
XMEAN, YMEAN	average or mid position (m) of school
XMED, YMED	median position (m) of school
THETA	angle of deviation (degrees) from vertical
XELP	one standard deviation (m) around the mean position in the x plane
YELP	one standard deviation (m) around the mean position in the y plane

Table 3. Fork lengths and wet weights (means and standard deviations) of fish used in experiments (1985, 1991).

EXPT	experiment number
FISH NO.	consecutive numbering system, used to uniquely identify individual fish
LENGTH	fork length (mm) of individual fish
WET WT	wet weight (g) of individual fish
MEAN	average for a particular parameter
S.D.	sample standard deviation ('n-1' degrees of freedom)

The data contained in this report will be used in an analysis of the behaviour of underyearling chinook salmon in fresh water, during transition to and under vertically stratified estuarine conditions, and in response to variations in dissolved oxygen.

In changing from a riverine environment in the WCS aquarium to a vertically stratified estuarine water column, salt water was added to the middle and bottom zones thereby gradually replacing the fresh water and increasing the salinity of the deeper waters. Juvenile chinook salmon displayed a consistent response to these changes and small increases in salinity elicited a marked distribution shift. The fish moved deeper in the water column and formed a relatively smaller school. Their subsequent distribution under stable, vertically stratified conditions was seemingly related to their ability to tolerate or adapt to salt water. Figure 2 exemplifies the response outlined above and Table 4 presents the salinity changes.

Figure 3 shows how these data may be used to describe the response of juvenile chinook salmon to hypoxia in the freshwater zone during vertically stratified estuarine conditions. The data (Table 5) originate from Expt. 1991-06 prior to, and during, the 3 h reduction in dissolved oxygen, followed by a 3 h period of increasing oxygen concentration. Fish distributions have been superimposed on the asymmetrical dissolved oxygen sag curve, along with the percentage of fish in the freshwater zone (determined from real-time visual counts).

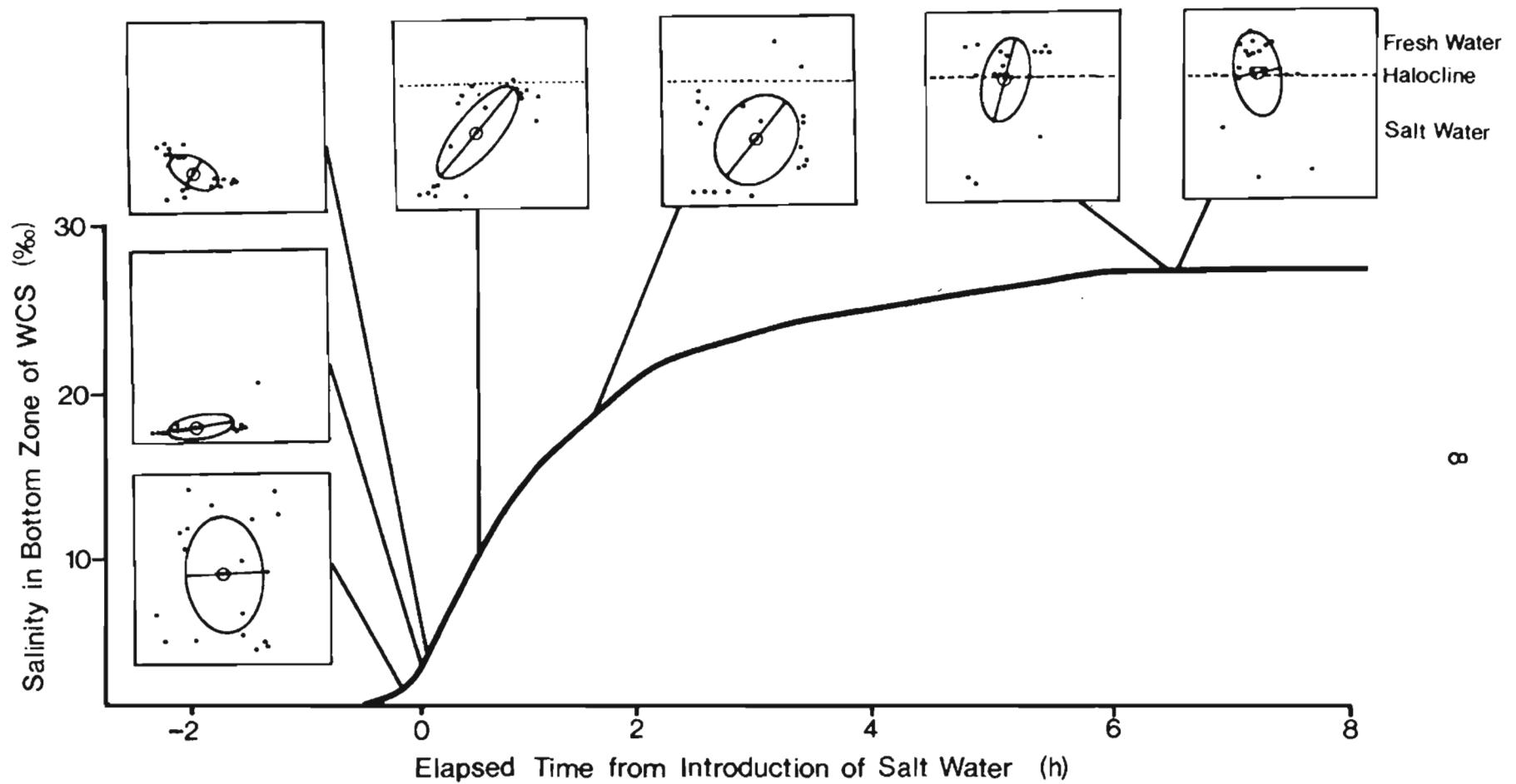


Figure 2. The distribution of juvenile chinook salmon during transition to estuarine conditions (salt water addition to bottom two zones of the WCS aquarium). Expt 1985-03 24, 25 April. The precise location of individual fish in the aquarium is depicted at specific times during the experiment.

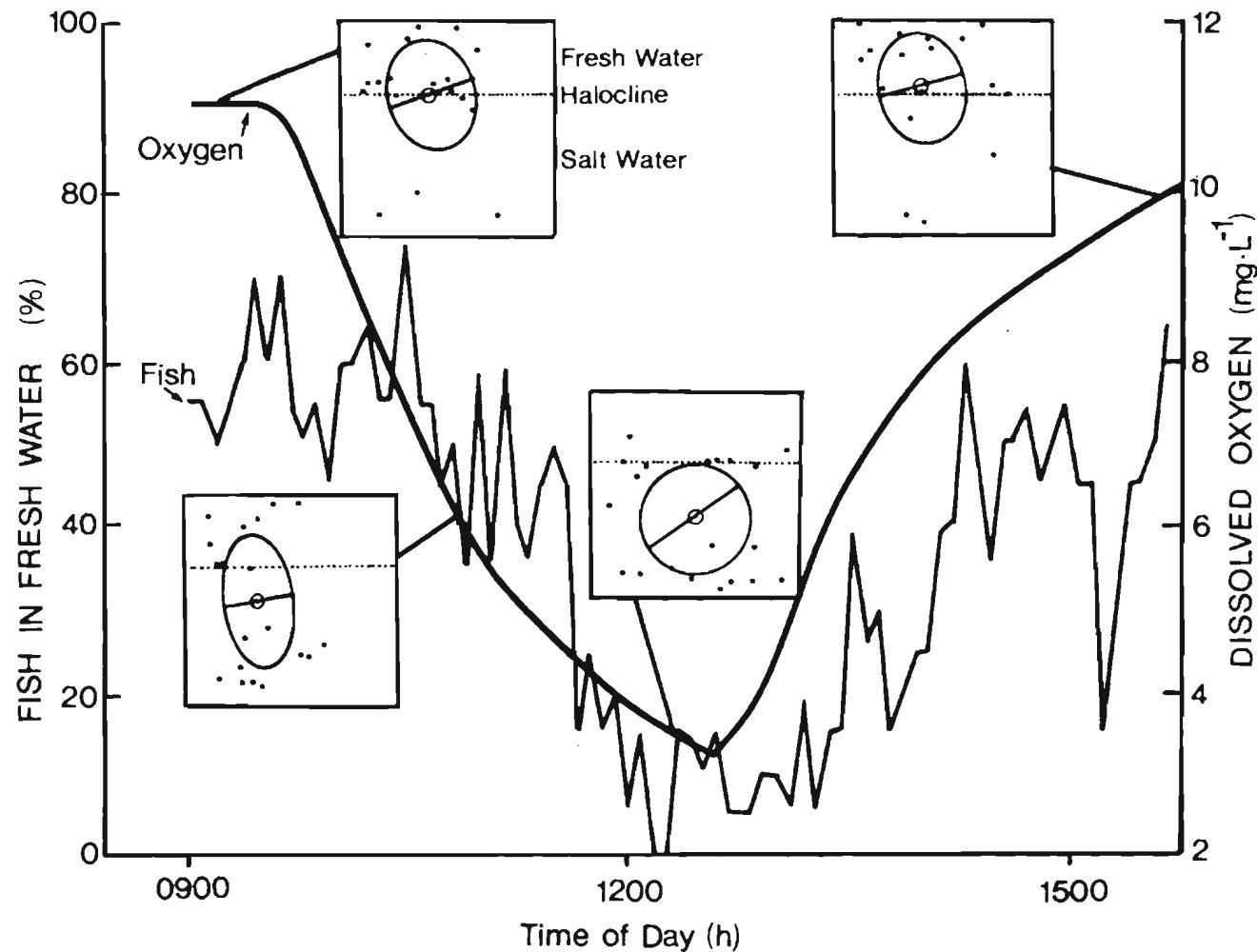


Figure 3. The distribution of juvenile chinook salmon in response to hypoxic conditions in fresh water during simulated vertically stratified estuarine conditions. Expt 1991-06 26 April. The precise location of individual fish in the WCS aquarium is depicted at specific times during the experiment.

The graph depicts the volitional movement of juvenile chinook salmon in response to changes in dissolved oxygen. Before and after the period of dissolved oxygen reduction most of the fish resided in the normoxic fresh water. Their distribution changed in response to the hypoxic conditions in fresh water and at the lower levels of dissolved oxygen the fish tended to occupy the deeper normoxic sea water.

ACKNOWLEDGMENTS

Western Canada Hydraulics Ltd. were responsible for the initial design and construction of the apparatus. H. Herunter, R. Lauzier, and C. McPherson provided invaluable assistance during subsequent developmental phases. E. Bard participated in data collection.

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Table 1. Swimming speeds of randomly selected juvenile chinook salmon determined during simulated conditions: riverine (stable fresh water 'FW ST'), brackish water transition (salt water addition 'SW ADD'), stable estuarine conditions (stable salt water 'SW ST'), and hypoxia in the fresh water zone (dissolved oxygen reduction 'DO2 RED'). Swimming speeds are expressed as cm per second and blem (body lengths) per second. All percentage values were transformed (arcsine square root) prior to calculation of means and standard deviations. Refer to text for explanation of headings.

EXPT NO: 91-01
MARCH 12, 1991

SIMULATED CONDITION: RIVERINE (STABLE FRESH WATER 'FW ST')
MEAN LENGTH: 4.5 cm

TIME (H)	FISH NO.	TOP DO2 (MGL)	BOTTOM TWO ZONES				TOP ZONE				% TIME TOP	TOT DIST (CM)	TOT OBS (S)	OVERALL CM/S BLEM/S
			CM	S	CM/S	BLEM/S	CM	S	CM/S	BLEM/S				
14:28:00	1						125	60.0	2.1	0.5	100	125	60	2.1 0.5
14:30:00	2		80	60.0	1.3	0.3					0	80	60	1.3 0.3
14:32:00	3		210	19.3	10.9	2.4	60	40.7	1.5	0.3	68	270	60	4.5 1.0
14:35:00	4						40	60.0	0.7	0.1	100	40	60	0.7 0.1
14:40:00	5						50	60.0	0.8	0.2	100	50	60	0.8 0.2
14:42:00	6						390	60.0	6.5	1.5	100	390	60	6.5 1.5
14:44:00	7		260	60.0	4.3	1.0					0	260	60	4.3 1.0
14:46:00	8		107	48.0	2.2	0.5	43	12.0	3.6	0.8	20	150	60	2.5 0.6
14:51:00	9		128	60.0	2.1	0.5					0	128	60	2.1 0.5
14:53:00	10		60	60.0	1.0	0.2					0	60	60	1.0 0.2
14:55:00	11						64	60.0	1.1	0.2	100	64	60	1.1 0.2
14:56:30	12		510	60.0	8.5	1.9					0	510	60	8.5 1.9
14:59:00	13		90	24.8	3.6	0.8	50	35.2	1.4	0.3	59	140	60	2.3 0.5
15:00:45	14		53	60.0	0.9	0.2					0	53	60	0.9 0.2
15:02:00	15		150	60.0	2.5	0.6					0	150	60	2.5 0.6
15:03:30	16						71	60.0	1.2	0.3	100	71	60	1.2 0.3
15:05:00	17		290	60.0	4.8	1.1					0	290	60	4.8 1.1
15:08:00	18						260	60.0	4.3	1.0	100	260	60	4.3 1.0
15:10:00	19		92	60.0	1.5	0.3					0	92	60	1.5 0.3
15:11:30	20						99	60.0	1.7	0.4	100	99	60	1.7 0.4
15:13:30	21		60	60.0	1.0	0.2					0	60	60	1.0 0.2
15:15:00	22						67	60.0	1.1	0.2	100	67	60	1.1 0.2
15:17:00	23		99	60.0	1.7	0.4					0	99	60	1.7 0.4
15:18:30	24		106	60.0	1.8	0.4					0	106	60	1.8 0.4
15:20:00	25						78	60.0	1.3	0.3	100	78	60	1.3 0.3
15:21:30	26		170	41.3	4.1	0.9	50	18.7	2.7	0.6	31	220	60	3.7 0.8
15:23:30	27		85	60.0	1.4	0.3					0	85	60	1.4 0.3
15:25:00	28						71	60.0	1.2	0.3	100	71	60	1.2 0.3
15:26:30	29		135	6.0	22.5	5.0					0	135	60	2.3 0.5
15:27:30	30		150	29.2	5.1	1.1	100	30.8	3.2	0.7	51	250	60	4.2 0.9
15:29:00	31						78	60.0	1.3	0.3	100	78	60	1.3 0.3
MEAN			149	49.9	4.3	1.0	100	50.4	2.1	0.5	44	146	60	2.4 0.5
S.D.			109	17.2	5.2	1.2	91	16.4	1.5	0.3	42	110	0	1.8 0.4
MIN			53	6.0	0.9	0.2	40	12.0	0.7	0.1	0	40	60	0.7 0.1
MAX			510	60.0	22.5	5.0	390	60.0	6.5	1.5	100	510	60	8.5 1.9

Table 1. cont.

EXPT NO: 91-01 MARCH 13, 1991			SIMULATED CONDITION: MEAN LEN: 4.5 cm		BRACKISH WATER TRANSITION (SALT WATER ADDITION 'SW ADD')							
TIME (H)	FISH NO.	TOP DO2 (MG/L)	BOTTOM TWO ZONES			TOP ZONE			% TIME TOP	TOT DIST (CM)	TOT OBS (S)	OVERALL CM/S BLEN/S
			CM	S	CM/S BLEN/S	CM	S	CM/S BLEN/S				
08:31:30	1	125	60.0	2.1	0.5				0	125	60	2.1 0.5
08:33:00	2					64	60.0	1.1 0.2	100	64	60	1.1 0.2
08:35:00	3	175	37.0	4.7	1.1	100	23.0	4.3 1.0	38	275	60	4.6 1.0
08:37:00	4					71	60.0	1.2 0.3	100	71	60	1.2 0.3
08:38:30	5	240	60.0	4.0	0.9				0	240	60	4.0 0.9
08:41:00	6		60	30.2	2.0 0.4	20	29.8	0.7 0.2	50	80	60	1.3 0.3
08:43:00	7	340	60.0	5.7	1.3				0	340	60	5.7 1.3
08:44:30	8					35	60.0	0.6 0.1	100	35	60	0.6 0.1
08:46:00	9	145	60.0	2.4	0.5				0	145	60	2.4 0.5
08:47:30	10	140	60.0	2.3	0.5				0	140	60	2.3 0.5
08:50:00	11	100	22.2	4.5	1.0	45	37.8	1.2 0.3	63	145	60	2.4 0.5
08:52:00	12	100	60.0	1.7	0.4				0	100	60	1.7 0.4
08:54:00	13	115	60.0	1.9	0.4				0	115	60	1.9 0.4
08:56:00	14	100	60.0	1.7	0.4				0	100	60	1.7 0.4
08:58:00	15					50	60.0	0.8 0.2	100	50	60	0.8 0.2
09:00:00	16					34	60.0	0.6 0.1	100	34	60	0.6 0.1
09:02:00	17	165	60.0	2.8	0.6				0	165	60	2.8 0.6
09:04:00	18	75	60.0	1.3	0.3				0	75	60	1.3 0.3
09:06:00	19	165	60.0	2.8	0.6				0	165	60	2.8 0.6
09:08:00	20	75	60.0	1.3	0.3				0	75	60	1.3 0.3
09:13:00	21	45	17.6	2.6	0.6	35	42.4	0.8 0.2	71	80	60	1.3 0.3
09:15:00	22	90	60.0	1.5	0.3				0	90	60	1.5 0.3
09:17:00	23	85	60.0	1.4	0.3				0	85	60	1.4 0.3
09:19:00	24	510	60.0	8.5	1.9				0	510	60	8.5 1.9
09:21:00	25	120	60.0	2.0	0.4				0	120	60	2.0 0.4
09:24:00	26	50	23.8	2.1	0.5	145	36.2	4.0 0.9	60	195	60	3.3 0.7
09:26:00	27	185	60.0	3.1	0.7				0	185	60	3.1 0.7
09:27:30	28	270	60.0	4.5	1.0				0	270	60	4.5 1.0
09:29:00	29	140	60.0	2.3	0.5				0	140	60	2.3 0.5
09:30:30	30	99	60.0	1.7	0.4				0	99	60	1.7 0.4
MEAN			149	53.2	2.8 0.6	60	46.9	1.5 0.3	15	144	60.0	2.4 0.5
S.D.			102	14.2	1.7 0.4	38	14.7	1.4 0.3	36	101	0.00	1.7 0.4
MIN			45	17.6	1.3 0.3	20	23.0	0.6 0.1	0	34	60	0.6 0.1
MAX			510	60.0	8.5 1.9	145	60.0	4.3 1.0	100	510	60	8.5 1.9

Table 1. cont.

EXPT NO: 91-01
MARCH 13, 1991

SIMULATED CONDITION: STABLE ESTUARINE CONDITIONS (STABLE SALT WATER 'SW ST')
MEAN LEN: 4.5 cm

TIME (H)	FISH NO.	TOP DO2 (MG/L)	BOTTOM TWO ZONES				TOP ZONE				% TIME TOP	TOT DIST (CM)	TOT OBS (S)	OVERALL CM/S BLEN/S
			CM	S	CM/S	BLEN/S	CM	S	CM/S	BLEN/S				
14:30:00	1						60	60.0	1.0	0.2	100	60	60	1.0 0.2
14:32:00	2		28	60.0	0.5	0.1					0	28	60	0.5 0.1
14:34:00	3		325	60.0	5.4	1.2					0	325	60	5.4 1.2
14:35:30	4						105	60.0	1.8	0.4	100	105	60	1.8 0.4
14:37:00	5		7	27.9	0.3	0.1	96	32.1	3.0	0.7	53	103	60	1.7 0.4
14:39:30	6						99	60.0	1.7	0.4	100	99	60	1.7 0.4
14:41:00	7		305	60.0	5.1	1.1					0	305	60	5.1 1.1
14:42:30	8		315	60.0	5.3	1.2					0	315	60	5.3 1.2
14:44:00	9						115	60.0	1.9	0.4	100	115	60	1.9 0.4
14:45:30	10						35	60.0	0.6	0.1	100	35	60	0.6 0.1
14:49:30	11						85	60.0	1.4	0.3	100	85	60	1.4 0.3
14:51:00	12		64	60.0	1.1	0.2					0	64	60	1.1 0.2
14:52:30	13		435	60.0	7.3	1.6					0	435	60	7.3 1.6
14:54:00	14		365	60.0	6.1	1.4					0	365	60	6.1 1.4
14:55:30	15						124	60.0	2.1	0.5	100	124	60	2.1 0.5
14:58:00	16						65	60.0	1.1	0.2	100	65	60	1.1 0.2
15:00:00	17		455	60.0	7.6	1.7					0	455	60	7.6 1.7
15:01:30	18		35	60.0	0.6	0.1					0	35	60	0.6 0.1
15:03:00	19						35	60.0	0.6	0.1	100	35	60	0.6 0.1
15:04:30	20		395	60.0	6.6	1.5					0	395	60	6.6 1.5
15:06:30	21		50	60.0	0.8	0.2					0	50	60	0.8 0.2
15:08:00	22						35	60.0	0.6	0.1	100	35	60	0.6 0.1
15:10:00	23						50	60.0	0.8	0.2	100	50	60	0.8 0.2
15:12:00	24		560	60.0	9.3	2.1					0	560	60	9.3 2.1
15:14:00	25		95	60.0	1.6	0.4					0	95	60	1.6 0.4
15:16:00	26						60	60.0	1.0	0.2	100	60	60	1.0 0.2
15:18:00	27						71	60.0	1.2	0.3	100	71	60	1.2 0.3
15:20:00	28		67	60.0	1.1	0.2					0	67	60	1.1 0.2
15:22:00	29		115	60.0	1.9	0.4					0	115	60	1.9 0.4
15:24:00	30						35	60.0	0.6	0.1	100	35	60	0.6 0.1
MEAN			226	58.0	3.8	0.8	71	58.1	1.3	0.3	47	156	60	2.6 0.6
S.D.			185	8.0	3.1	0.7	31	7.2	0.7	0.2	45	154	0	2.6 0.6
MIN			7	27.9	0.3	0.1	35	32.1	0.6	0.1	0	28	60	0.5 0.1
MAX			560	60.0	9.3	2.1	124	60.0	3.0	0.7	100	560	60	9.3 2.1

Table 1. cont.

EXPT NO: 91-01 MARCH 14, 1991			SIMULATED CONDITION: MEAN LEN: 4.5 cm				HYPOXIA IN THE FRESH WATER ZONE (DISSOLVED OXYGEN REDUCTION 'DO2 RED')							
TIME (H)	FISH NO.	TOP DO2 (MG/L)	BOTTOM TWO ZONES				TOP ZONE				% TIME TOP	TOT DIST (CM)	TOT OBS (S)	OVERALL CM/S BLENS
			CM	S	CM/S	BLENS	CM	S	CM/S	BLENS				
08:57:00	1	11.2	135	50.1	2.7	0.6	30	9.9	3.0	0.7	17	165	60	2.8 0.6
09:01:00	2	11.2	32	60.0	0.5	0.1					0	32	60	0.5 0.1
09:03:00	3	11.2	580	54.8	10.6	2.4	152	5.2	29.2	6.5	9	732	60	12.2 2.7
09:05:00	4	11.2					35	60.0	0.6	0.1	100	35	60	0.6 0.1
09:07:00	5	11.2	43	60.0	0.7	0.2					0	43	60	0.7 0.2
09:10:00	6	11.2	20	6.6	3.0	0.7	148	53.4	2.8	0.6	89	168	60	2.8 0.6
09:12:00	7	11.2	50	60.0	0.8	0.2					0	50	60	0.8 0.2
09:15:00	8	11.2	20	60.0	0.3	0.1					0	20	60	0.3 0.1
09:17:00	9	11.2					70	60.0	1.2	0.3	100	70	60	1.2 0.3
09:18:30	10	11.2	155	42.8	3.6	0.8	50	17.2	2.9	0.7	29	205	60	3.4 0.8
MEAN		11.2	129	49.3	2.8	0.6	81	34.3	6.6	1.5	29	152	60	2.5 0.6
S.D.		0.0	189	18.3	3.4	0.8	55	26.2	11.1	2.5	37	215	0	3.6 0.8
MIN		11.2	20	6.6	0.3	0.1	30	5.2	0.6	0.1	0	20	60	0.3 0.1
MAX		11.2	580	60.0	10.6	2.4	152	60.0	29.2	6.5	100	732	60	12.2 2.7
09:45:00	11	10.4	19	60.0	0.3	0.1					0	19	60	0.3 0.1
09:47:00	12	10.3	67	60.0	1.1	0.2					0	67	60	1.1 0.2
09:49:00	13	10.1	202	40.1	5.0	1.1	12	19.9	0.6	0.1	33	214	60	3.6 0.8
09:51:00	14	9.9					63	60.0	1.1	0.2	100	63	60	1.1 0.2
09:54:00	15	9.8	150	60.0	2.5	0.6					0	150	60	2.5 0.6
09:58:00	16	9.5	312	60.0	5.2	1.2					0	312	60	5.2 1.2
10:00:00	17	9.3	128	60.0	2.1	0.5					0	128	60	2.1 0.5
10:03:00	18	9.0	60	60.0	1.0	0.2					0	60	60	1.0 0.2
10:05:00	19	8.9	260	60.0	4.3	1.0					0	260	60	4.3 1.0
10:11:00	20	8.4					99	60.0	1.7	0.4	100	99	60	1.7 0.4
MEAN		9.6	150	57.5	2.7	0.6	58	46.6	1.1	0.2	13	137	60	2.3 0.5
S.D.		0.7	103	7.0	1.9	0.4	44	23.2	0.5	0.1	38	96	0	1.6 0.4
MIN		8.4	19	40.1	0.3	0.1	12	19.9	0.6	0.1	0	19	60	0.3 0.1
MAX		10.4	312	60.0	5.2	1.2	99	60.0	1.7	0.4	100	312	60	5.2 1.2
10:23:00	21	7.5	153	50.4	3.0	0.7	46	9.6	4.8	1.1	16	199	60	3.3 0.7
10:26:00	22	7.3	80	60.0	1.3	0.3					0	80	60	1.3 0.3
10:29:00	23	7.1	150	60.0	2.5	0.6					0	150	60	2.5 0.6
10:33:00	24	6.9					75	60.0	1.3	0.3	100	75	60	1.3 0.3
10:35:00	25	6.8	163	39.2	4.2	0.9	38	20.8	1.8	0.4	35	201	60	3.4 0.7
10:38:00	26	6.6					138	60.0	2.3	0.5	100	138	60	2.3 0.5
10:40:00	27	6.6	80	60.0	1.3	0.3					0	80	60	1.3 0.3
10:41:00	28	6.5	28	60.0	0.5	0.1					0	28	60	0.5 0.1
10:43:00	29	6.4	260	60.0	4.3	1.0					0	260	60	4.3 1.0
10:45:00	30	6.3	18	60.0	0.3	0.1					0	18	60	0.3 0.1

Table 1. cont.

TIME (H)	FISH NO.	TOP DO2 (MG/L)	BOTTOM TWO ZONES				TOP ZONE				% TIME TOP	TOT DIST (CM)	TOT OBS (S)	OVERALL	
			CM	S	CM/S	BLEN/S	CM	S	CM/S	BLEN/S				CM/S	BLEN/S
MEAN	6.8		117	56.2	2.2	0.5	74	37.6	2.5	0.6	16	123	60	2.0	0.5
S.D.	0.4		81	7.6	1.6	0.4	45	26.3	1.6	0.3	37	80	0	1.3	0.3
MIN	6.3		18	39.2	0.3	0.1	38	9.6	1.3	0.3	0	18	60	0.3	0.1
MAX	7.5		260	60.0	4.3	1.0	138	60.0	4.8	1.1	100	260	60	4.3	1.0
10:58:00	31	5.7	49	60.0	0.8	0.2					0	49	60	0.8	0.2
11:01:00	32	5.6	25	60.0	0.4	0.1					0	25	60	0.4	0.1
11:03:00	33	5.5	75	60.0	1.3	0.3					0	75	60	1.3	0.3
11:06:00	34	5.4					180	60.0	3.0	0.7	100	180	60	3.0	0.7
11:09:00	35	5.3	36	60.0	0.6	0.1					0	36	60	0.6	0.1
11:12:00	36	5.1	46	60.0	0.8	0.2					0	46	60	0.8	0.2
11:14:00	37	5.1	29	54.2	0.5	0.1	14	5.8	2.4	0.5	10	43	60	0.7	0.2
11:17:00	38	5.0	46	60.0	0.8	0.2					0	46	60	0.8	0.2
11:18:00	39	4.9	180	60.0	3.0	0.7					0	180	60	3.0	0.7
11:21:00	40	4.9	42	60.0	0.7	0.2					0	42	60	0.7	0.2
MEAN	5.3		59	59.4	1.0	0.2	97	32.9	2.7	0.6	4	72	60	1.2	0.3
S.D.	0.3		48	1.9	0.8	0.2	117	38.3	0.4	0.1	28	58	0	1.0	0.2
MIN	4.9		25	54.2	0.4	0.1	14	5.8	2.4	0.5	0	25	60	0.4	0.1
MAX	5.7		180	60.0	3.0	0.7	180	60.0	3.0	0.7	100	180	60	3.0	0.7
11:31:00	41	4.6	135	60.0	2.3	0.5					0	135	60	2.3	0.5
11:33:00	42	4.5	28	60.0	0.5	0.1					0	28	60	0.5	0.1
11:35:00	43	4.5	146	41.8	3.5	0.8	21	18.2	1.2	0.3	30	167	60	2.8	0.6
11:38:00	44	4.4	67	60.0	1.1	0.2					0	67	60	1.1	0.2
MEAN	4.5		94	55.5	1.8	0.4	21	18.2	1.2	0.3	2	99	60	1.7	0.4
S.D.	0.1		56	9.1	1.3	0.3					17	63	0	1.1	0.2
MIN	4.4		28	41.8	0.5	0.1	21	18.2	1.2	0.3	0	28	60	0.5	0.1
MAX	4.6		146	60.0	3.5	0.8	21	18.2	1.2	0.3	30	167	60	2.8	0.6
11:47:00	45	4.1	145	57.2	2.5	0.6	25	2.8	8.9	2.0	5	170	60	2.8	0.6
11:49:00	46	4.1	53	60.0	0.9	0.2					0	53	60	0.9	0.2
11:51:00	47	4.0	11	60.0	0.2	0.0					0	11	60	0.2	0.0
11:53:00	48	3.9	65	37.3	1.7	0.4	135	22.7	5.9	1.3	38	200	60	3.3	0.7
11:55:00	49	3.9	28	60.0	0.5	0.1					0	28	60	0.5	0.1
11:58:00	50	3.8	65	57.7	1.1	0.3	5	2.3	2.2	0.5	4	70	60	1.2	0.3
12:00:00	51	3.8	380	60.0	6.3	1.4					0	380	60	6.3	1.4
12:02:00	52	3.7	46	60.0	0.8	0.2					0	46	60	0.8	0.2
12:04:30	53	3.7	505	60.0	8.4	1.9					0	505	60	8.4	1.9
12:07:00	54	3.7	100	60.0	1.7	0.4					0	100	60	1.7	0.4
MEAN	3.9		140	57.2	2.4	0.5	55	9.3	5.7	1.3	1	156	60	2.6	0.6
S.D.	0.2		166	7.1	2.7	0.6	70	11.6	3.4	0.8	12	165	0	2.7	0.6
MIN	3.7		11	37.3	0.2	0.0	5	2.3	2.2	0.5	0	11	60	0.2	0.0
MAX	4.1		505	60.0	8.4	1.9	135	22.7	8.9	2.0	38	505	60	8.4	1.9

Table 1. cont.

TIME (H)	FISH NO.	TOP DO2 (MG/L)	BOTTOM TWO ZONES				TOP ZONE				% TIME TOP	TOT DIST (CM)	TOT OBS (S)	OVERALL CM/S BLENS
			CM	S	CM/S BLENS		CM	S	CM/S BLENS					
12:18:30	55	3.5	70	60.0	1.2	0.3					0	70	60	1.2 0.3
12:20:00	56	3.4	82	60.0	1.4	0.3					0	82	60	1.4 0.3
12:21:30	57	3.4	335	60.0	5.6	1.2					0	335	60	5.6 1.2
12:23:00	58	3.4	635	60.0	10.6	2.4					0	635	60	10.6 2.4
12:24:30	59	3.4	36	60.0	0.6	0.1					0	36	60	0.6 0.1
12:26:45	60	3.4	89	60.0	1.5	0.3					0	89	60	1.5 0.3
12:26:45	61	3.4	64	60.0	1.1	0.2					0	64	60	1.1 0.2
12:28:15	62	3.3	28	60.0	0.5	0.1					0	28	60	0.5 0.1
12:28:15	63	3.3	39	60.0	0.7	0.1					0	39	60	0.7 0.1
12:29:30	64	3.3	185	60.0	3.1	0.7					0	185	60	3.1 0.7
MEAN		3.4	156	60.0	2.6	0.6	0	0.0	0.0		0	156	60	2.6 0.6
S.D.		0.1	192	0.0	3.2	0.7	0	0.0	0.0		0	192	0	3.2 0.7
MIN		3.3	28	60.0	0.5	0.1	0	0.0	0.0		0	28	60	0.5 0.1
MAX		3.5	635	60.0	10.6	2.4	0	0.0	0.0		0	635	60	10.6 2.4
12:56:00	65	4.6	67	60.0	1.1	0.2					0	67	60	1.1 0.2
12:58:00	66	4.8	89	60.0	1.5	0.3					0	89	60	1.5 0.3
13:00:00	67	4.9	205	60.0	3.4	0.8					0	205	60	3.4 0.8
13:02:00	68	5.2	43	53.2	0.8	0.2	28	6.8	4.1	0.9	11	71	60	1.2 0.3
13:04:00	69	5.4	210	60.0	3.5	0.8					0	210	60	3.5 0.8
13:07:00	70	5.4	50	60.0	0.8	0.2					0	50	60	0.8 0.2
13:09:00	71	5.5	64	60.0	1.1	0.2					0	64	60	1.1 0.2
13:12:00	72	5.7	600	56.4	10.6	2.4	25	3.6	6.9	1.6	6	625	60	10.4 2.3
13:15:00	73	5.9	75	60.0	1.3	0.3	60	7.1	8.5	1.9	0	75	60	1.3 0.3
13:17:00	74	6.0	64	52.9	1.2	0.3					12	124	60	2.1 0.5
MEAN		5.3	147	58.3	2.5	0.6	38	5.8	6.5	1.5	1	158	60	2.6 0.6
S.D.		0.5	170	3.0	3.0	0.7	19	1.9	2.2	0.5	9	174	0	2.9 0.6
MIN		4.6	43	52.9	0.8	0.2	25	3.6	4.1	0.9	0	50	60	0.8 0.2
MAX		6.0	600	60.0	10.6	2.4	60	7.1	8.5	1.9	12	625	60	10.4 2.3
13:27:00	75	6.5	135	60.0	2.3	0.5					0	135	60	2.3 0.5
13:29:00	76	6.6	325	60.0	5.4	1.2					0	325	60	5.4 1.2
13:32:00	77	6.7	615	58.3	10.5	2.4	35	1.7	20.6	4.6	3	650	60	10.8 2.4
13:34:00	78	6.9	92	60.0	1.5	0.3					0	92	60	1.5 0.3
13:36:00	79	7.0	645	58.3	11.1	2.5	15	1.7	8.8	2.0	3	660	60	11.0 2.5
13:39:00	80	7.2					195	60.0	3.3	0.7	100	195	60	3.3 0.7
13:41:00	81	7.3	25	60.0	0.4	0.1					0	25	60	0.4 0.1
13:43:00	82	7.4	365	60.0	6.1	1.4					0	365	60	6.1 1.4
13:45:00	83	7.5	43	60.0	0.7	0.2					0	43	60	0.7 0.2
13:47:00	84	7.6	345	60.0	5.8	1.3					0	345	60	5.8 1.3
MEAN		7.1	288	59.6	4.9	1.1	82	21.1	10.9	2.4	4	284	60	4.7 1.1
S.D.		0.4	233	0.7	4.0	0.9	99	33.7	8.9	2.0	28	231	0	3.8 0.9
MIN		6.5	25	58.3	0.4	0.1	15	1.7	3.3	0.7	0	25	60	0.4 0.1
MAX		7.6	645	60.0	11.1	2.5	195	60.0	20.6	4.6	100	660	60	11.0 2.5

Table 1. cont.

TIME (H)	FISH NO.	TOP DO2 (MG/L)	BOTTOM TWO ZONES				TOP ZONE				% TIME TOP	TOT DIST (CM)	TOT OBS (S)	OVERALL CM/S BLENS	
			CM		S	CM/S BLENS	CM		S	CM/S BLENS					
13:50:00	85	7.7					89	60.0	1.5	0.3	100	89	60	1.5	0.3
13:52:00	86	7.8	107	47.1	2.3	0.5	71	12.9	5.5	1.2	21	178	60	3.0	0.7
13:54:30	87	7.9	40	60.0	0.7	0.1					0	40	60	0.7	0.1
13:58:00	88	8.0	18	60.0	0.3	0.1					0	18	60	0.3	0.1
14:02:00	89	8.1	7	60.0	0.1	0.0					0	7	60	0.1	0.0
14:07:00	90	8.3	28	60.0	0.5	0.1					0	28	60	0.5	0.1
14:10:00	91	8.4	21	60.0	0.4	0.1					0	21	60	0.4	0.1
14:14:00	92	8.5					7	60.0	0.1	0.0	100	7	60	0.1	0.0
14:18:00	93	8.6	20	2.0	10.0	2.2	40	58.0	0.7	0.2	97	60	60	1.0	0.2
14:22:00	94	8.8	45	7.0	6.4	1.4	120	53.0	2.3	0.5	88	165	60	2.8	0.6
MEAN	8.2		36	44.5	2.6	0.6	65	48.8	2.0	0.5	34	61	60	1.0	0.2
S.D.	0.4		31	25.1	3.7	0.8	44	20.3	2.1	0.5	41	63	0	1.1	0.2
MIN	7.7		7	2.0	0.1	0.0	7	12.9	0.1	0.0	0	7	60	0.1	0.0
MAX	8.8		107	60.0	10.0	2.2	120	60.0	5.5	1.2	100	178	60	3.0	0.7
14:50:00	95	9.4					32	60.0	0.5	0.1	100	32	60	0.5	0.1
14:53:00	96	9.5	445	60.0	7.4	1.7					0	445	60	7.4	1.7
14:53:00	97	9.5	64	60.0	1.1	0.2					0	64	60	1.1	0.2
15:00:00	98	9.7					46	60.0	0.8	0.2	100	46	60	0.8	0.2
15:03:00	99	9.8					78	60.0	1.3	0.3	100	78	60	1.3	0.3
15:07:00	100	9.8	25	60.0	0.4	0.1					0	25	60	0.4	0.1
15:10:00	101	9.8	195	43.6	4.5	1.0	105	16.4	6.4	1.4	27	300	60	5.0	1.1
15:13:00	102	9.9	25	60.0	0.4	0.1					0	25	60	0.4	0.1
15:16:00	103	10.0	25	60.0	0.4	0.1					0	25	60	0.4	0.1
15:18:00	104	10.0	21	5.3	4.0	0.9	57	54.7	1.0	0.2	91	78	60	1.3	0.3
MEAN	9.7		114	49.8	2.6	0.6	64	50.2	2.0	0.4	37	112	60	1.9	0.4
S.D.	0.2		159	20.6	2.7	0.6	29	19.0	2.5	0.6	43	143	0	2.4	0.5
MIN	9.4		21	5.3	0.4	0.1	32	16.4	0.5	0.1	0	25	60	0.4	0.1
MAX	10.0		445	60.0	7.4	1.7	105	60.0	6.4	1.4	100	445	60	7.4	1.7

Table 1. cont.

EXPT NO: 91-02
MARCH 19, 1991 SIMULATED CONDITION:
 MEAN LEN: 4.9 cm RIVERINE (STABLE FRESH WATER 'FW ST')

TIME (H)	FISH NO.	TOP DO2 (MG/L)	BOTTOM TWO ZONES				TOP ZONE				% TIME TOP	TOT DIST (CM)	TOT OBS (S)	OVERALL CM/S BLENS
			CM	S	CM/S	BLENS	CM	S	CM/S	BLENS				
14:00:00	1						64	60.0	1.1	0.2	100	64	60	1.1 0.2
14:02:00	2		291	60.0	4.9	1.1					0	291	60	4.9 1.1
14:04:00	3		39	60.0	0.7	0.1					0	39	60	0.7 0.1
14:06:00	4		480	44.2	10.9	2.4	105	15.8	6.6	1.5	26	585	60	9.8 2.2
14:08:00	5						220	60.0	3.7	0.8	100	220	60	3.7 0.8
14:11:00	6		525	45.2	11.6	2.6	150	14.8	10.1	2.3	25	675	60	11.3 2.5
14:12:30	7						82	60.0	1.4	0.3	100	82	60	1.4 0.3
14:14:00	8		128	60.0	2.1	0.5					0	128	60	2.1 0.5
14:16:00	9		695	59.5	11.7	2.6	10	0.5	20.0	4.5	1	705	60	11.8 2.6
14:18:00	10						64	60.0	1.1	0.2	100	64	60	1.1 0.2
14:21:00	11						64	60.0	1.1	0.2	100	64	60	1.1 0.2
14:23:00	12		675	59.7	11.3	2.5	5	0.3	16.7	3.7	1	680	60	11.3 2.5
14:24:30	13		200	21.5	9.3	2.1	140	38.5	3.6	0.8	64	340	60	5.7 1.3
14:26:00	14						110	60.0	1.8	0.4	100	110	60	1.8 0.4
14:28:00	15		185	47.4	3.9	0.9	60	12.6	4.8	1.1	21	245	60	4.1 0.9
14:31:00	16		174	60.0	2.9	0.6					0	174	60	2.9 0.6
14:34:00	17						57	60.0	1.0	0.2	100	57	60	1.0 0.2
14:37:00	18						213	60.0	3.6	0.8	100	213	60	3.6 0.8
14:40:00	19		670	57.9	11.6	2.6	10	2.1	4.8	1.1	4	680	60	11.3 2.5
14:43:00	20						82	60.0	1.4	0.3	100	82	60	1.4 0.3
14:46:00	21		395	31.9	12.4	2.8	215	28.1	7.7	1.7	47	610	60	10.2 2.3
14:50:00	22						78	60.0	1.3	0.3	100	78	60	1.3 0.3
14:54:00	23		380	60.0	6.3	1.4					0	380	60	6.3 1.4
14:58:00	24						167	60.0	2.8	0.6	100	167	60	2.8 0.6
15:02:00	25		60	60.0	1.0	0.2					0	60	60	1.0 0.2
15:06:00	26		103	24.3	4.2	0.9	89	35.7	2.5	0.6	60	192	60	3.2 0.7
15:09:00	27		53	60.0	0.9	0.2					0	53	60	0.9 0.2
15:13:00	28						135	60.0	2.3	0.5	100	135	60	2.3 0.5
15:16:00	29		10	3.4	2.9	0.7	145	56.6	2.6	0.6	94	155	60	2.6 0.6
15:20:00	30		21	60.0	0.4	0.1					0	21	60	0.4 0.1
MEAN			282	48.6	6.1	1.4	103	42.0	4.6	1.0	54	245	60	4.1 0.9
S.D.			240	17.2	4.6	1.0	64	23.6	5.1	1.1	40	227	0	3.8 0.8
MIN			10	3.4	0.4	0.1	5	0.3	1.0	0.2	0	0	0	0.0 0.1
MAX			695	60.0	12.4	2.8	220	60.0	20.0	4.5	100	705	60	11.8 2.6

Table 1. cont.

EXPT NO: 91-02
MARCH 20, 1991 SIMULATED CONDITION:
 MEAN LEN: 4.9 cm BRACKISH WATER TRANSITION (SALT WATER ADDITION 'SW ADD')

TIME (H)	FISH NO.	TOP DO2 (MG/L)	BOTTOM TWO ZONES				TOP ZONE				% TIME TOP	TOT DIST (CM)	TOT OBS (S)	OVERALL CM/S BLEN/S
			CM	S	CM/S	BLEN/S	CM	S	CM/S	BLEN/S				
08:30:30	1		280	60.0	4.7	1.0					0	280	60	4.7 1.0
08:33:00	2		165	60.0	2.8	0.6					0	165	60	2.8 0.6
08:34:30	3						135	60.0	2.3	0.5	100	135	60	2.3 0.5
08:36:00	4		120	60.0	2.0	0.4					0	120	60	2.0 0.4
08:37:30	5		110	60.0	1.8	0.4					0	110	60	1.8 0.4
08:40:00	6		490	60.0	8.2	1.8					0	490	60	8.2 1.8
08:41:00	7		400	60.0	6.7	1.5					0	400	60	6.7 1.5
08:42:30	8						85	60.0	1.4	0.3	100	85	60	1.4 0.3
08:44:00	9		445	60.0	7.4	1.7					0	445	60	7.4 1.7
08:45:30	10						57	60.0	1.0	0.2	100	57	60	1.0 0.2
08:48:00	11		460	60.0	7.7	1.7					0	460	60	7.7 1.7
08:49:30	12		640	60.0	10.7	2.4					0	640	60	10.7 2.4
08:51:30	13		650	60.0	10.8	2.4					0	650	60	10.8 2.4
08:53:00	14		515	40.9	12.6	2.8	180	19.1	9.4	2.1	32	695	60	11.6 2.6
08:55:00	15		200	60.0	3.3	0.7					0	200	60	3.3 0.7
08:57:00	16		425	60.0	7.1	1.6					0	425	60	7.1 1.6
08:58:30	17		190	60.0	3.2	0.7					0	190	60	3.2 0.7
09:00:00	18		290	49.7	5.8	1.3	65	10.3	6.3	1.4	17	355	60	5.9 1.3
09:02:00	19		270	60.0	4.5	1.0					0	270	60	4.5 1.0
09:03:30	20		330	60.0	5.5	1.2					0	330	60	5.5 1.2
09:06:00	21		290	60.0	4.8	1.1					0	290	60	4.8 1.1
09:07:30	22		315	58.3	5.4	1.2	1	1.7	0.6	0.1	3	316	60	5.3 1.2
09:09:00	23		430	60.0	7.2	1.6					0	430	60	7.2 1.6
09:10:30	24		330	60.0	5.5	1.2					0	330	60	5.5 1.2
09:12:00	25		115	56.0	2.1	0.5	15	4.0	3.8	0.8	7	130	60	2.2 0.5
09:15:00	26		215	45.3	4.7	1.1	65	14.7	4.4	1.0	24	280	60	4.7 1.0
09:18:30	27		315	60.0	5.3	1.2					0	315	60	5.3 1.2
09:20:00	28		270	60.0	4.5	1.0					0	270	60	4.5 1.0
09:22:00	29		330	60.0	5.5	1.2					0	330	60	5.5 1.2
09:23:30	30		175	60.0	2.9	0.7					0	175	60	2.9 0.7
MEAN			325	58.2	5.6	1.3	75	28.7	3.6	0.8	5	312	60.0	5.2 1.2
S.D.			147	4.9	2.7	0.6	59	26.5	3.0	0.7	28	167	0.00	2.8 0.6
MIN			110	40.9	1.8	0.4	1	1.7	0.6	0.1	0	57	60	1.0 0.2
MAX			650	60.0	12.6	2.8	180	60.0	9.4	2.1	100	695	60	11.6 2.6

Table 1. cont.

EXPT NO: 91-02 MARCH 20, 1991			SIMULATED CONDITION: MEAN LEN: 4.9 cm			STABLE ESTUARINE CONDITIONS (STABLE SALT WATER 'SW ST')						
TIME (H)	FISH NO.	TOP DO2 (MG/L)	BOTTOM TWO ZONES			TOP ZONE			% TIME TOP	TOT DIST (CM)	TOT OBS (S)	OVERALL CM/S BLENS
			CM	S	CM/S BLENS	CM	S	CM/S BLENS				
14:00:00	1	300	60.0	5.00	1.1				0	300	60	5.0 1.1
14:06:00	2	20	17.8	1.1	0.3	90	42.2	2.1	0.5	70	110	60 1.8 0.4
14:09:00	3	4	8.7	0.5	0.1	57	51.3	1.1	0.2	85	61	60 1.0 0.2
14:12:00	4	160	60.0	2.7	0.6				0	160	60	2.7 0.6
14:15:00	5					180	60.0	3.0	0.7	100	180	60 3.0 0.7
14:19:00	6	355	60.0	5.9	1.3				0	355	60	5.9 1.3
14:22:00	7	30	60.0	0.5	0.1				0	30	60	0.5 0.1
14:25:00	8	170	60.0	2.8	0.6				0	170	60	2.8 0.6
14:28:00	9	4	1.3	3.1	0.7	57	58.7	1.0	0.2	98	61	60 1.0 0.2
14:31:00	10	110	60.0	1.8	0.4				0	110	60	1.8 0.4
14:35:00	11	14	60.0	0.2	0.1				0	14	60	0.2 0.1
14:38:00	12	92	60.0	1.5	0.3				0	92	60	1.5 0.3
14:41:00	13	240	35.5	6.8	1.5	140	24.5	5.7	1.3	41	380	60 6.3 1.4
14:44:00	14					170	60.0	2.8	0.6	100	170	60 2.8 0.6
14:47:00	15					95	60.0	1.6	0.4	100	95	60 1.6 0.4
14:51:00	16	39	60.0	0.7	0.1				0	39	60	0.7 0.1
14:54:00	17	85	60.0	1.4	0.3				0	85	60	1.4 0.3
14:57:00	18					28	60.0	0.5	0.1	100	28	60 0.5 0.1
15:00:00	19	21	60.0	0.4	0.1				0	21	60	0.4 0.1
15:03:00	20	215	60.0	3.6	0.8				0	215	60	3.6 0.8
15:07:00	21	220	25.3	8.7	1.9	300	34.7	8.6	1.9	58	520	60 8.7 1.9
15:10:00	22	156	60.0	2.6	0.6				0	156	60	2.6 0.6
15:12:00	23	50	60.0	0.8	0.2				0	50	60	0.8 0.2
15:14:00	24	300	60.0	5.0	1.1				0	300	60	5.0 1.1
15:16:00	25	14	60.0	0.2	0.1				0	14	60	0.2 0.1
15:19:00	26	135	60.0	2.3	0.5				0	135	60	2.3 0.5
15:21:00	27	60	60.0	1.0	0.2				0	60	60	1.0 0.2
15:23:00	28					89	60.0	1.5	0.3	100	89	60 1.5 0.3
15:25:00	29	225	60.0	3.8	0.8				0	225	60	3.8 0.8
15:27:00	30	35	20.2	1.7	0.4	40	39.8	1.0	0.2	66	75	60 1.3 0.3
MEAN		122	50.0	2.6	0.6	113	50.1	2.6	0.6	20	143	60 2.4 0.5
S.D.		106	19.1	2.2	0.5	80	12.8	2.5	0.6	37	123	0 2.1 0.5
MIN		4	1.3	0.2	0.1	28	24.5	0.5	0.1	0	14	60 0.2 0.1
MAX		355	60.0	8.7	1.9	300	60.0	8.6	1.9	100	520	60 8.7 1.9

Table 1. cont.

EXPT NO: 91-02 MARCH 21, 1991			SIMULATED CONDITION: MEAN LEN: 4.9 cm			HYPOXIA IN THE FRESH WATER ZONE (DISSOLVED OXYGEN REDUCTION 'DO2 RED')									
TIME (H)	FISH NO.	TOP DO2 (MG/L)	BOTTOM TWO ZONES			TOP ZONE			% TIME TOP	TOT DIST (CM)	TOT OBS (S)	OVERALL CM/S BLEN/S			
			CM	S	CM/S BLEN/S	CM	S	CM/S BLEN/S							
09:00:00	1	11.0				57	60.0	1.0	0.2	100	57	60	1.0	0.2	
09:02:00	2	11.0	14	60.0	0.2	0.1				0	14	60	0.2	0.1	
09:04:00	3	11.0	21	60.0	0.4	0.1				0	21	60	0.4	0.1	
09:06:00	4	11.0	21	39.0	0.5	0.1	21	21.0	1.0	0.2	35	42	60	0.7	0.2
09:08:00	5	11.0				71	60.0	1.2	0.3	100	71	60	1.2	0.3	
09:11:00	6	11.0	46	4.9	9.4	2.1	128	55.1	2.3	0.5	92	174	60	2.9	0.6
09:13:00	7	11.0	53	60.0	0.9	0.2				0	53	60	0.9	0.2	
09:15:00	8	11.0				64	60.0	1.1	0.2	100	64	60	1.1	0.2	
09:17:00	9	11.0				39	60.0	0.7	0.1	100	39	60	0.7	0.1	
09:19:00	10	11.0				25	60.0	0.4	0.1	100	25	60	0.4	0.1	
MEAN		11.0	31	44.8	2.3	0.5	58	53.7	1.1	0.2	69	56	60	0.9	0.2
S.D.		0.0	17	24.1	4.0	0.9	36	14.5	0.6	0.1	42	46	0	0.8	0.2
MIN		11.0	14	4.9	0.2	0.1	21	21.0	0.4	0.1	0	14	60	0.2	0.1
MAX		11.0	53	60.0	9.4	2.1	128	60.0	2.3	0.5	100	174	60	2.9	0.6
09:49:00	11	9.9				28	60.0	0.5	0.1	100	28	60	0.5	0.1	
09:51:00	12	9.7				18	60.0	0.3	0.1	100	18	60	0.3	0.1	
09:53:00	13	9.6				46	60.0	0.8	0.2	100	46	60	0.8	0.2	
09:55:00	14	9.3	103	60.0	1.7	0.4				0	103	60	1.7	0.4	
09:57:00	15	9.2				28	60.0	0.5	0.1	100	28	60	0.5	0.1	
10:00:00	16	8.9	28	60.0	0.5	0.1				0	28	60	0.5	0.1	
10:02:00	17	8.7				60	60.0	1.0	0.2	100	60	60	1.0	0.2	
10:04:00	18	8.5	4	0.5	8.0	1.8	75	59.5	1.3	0.3	99	79	60	1.3	0.3
10:06:00	19	8.3	10	8.0	1.3	0.3	130	52.0	2.5	0.6	87	140	60	2.3	0.5
10:08:00	20	8.2	32	60.0	0.5	0.1				0	32	60	0.5	0.1	
MEAN		9.0	35	37.7	2.4	0.5	55	58.8	1.0	0.2	76	56	60	0.9	0.2
S.D.		0.6	40	30.7	3.2	0.7	39	3.0	0.8	0.2	42	40	0	0.7	0.1
MIN		8.2	4	0.5	0.5	0.1	18	52.0	0.3	0.1	0	18	60	0.3	0.1
MAX		9.9	103	60.0	8.0	1.8	130	60.0	2.5	0.6	100	140	60	2.3	0.5
10:19:00	21	7.5				32	60.0	0.5	0.1	100	32	60	0.5	0.1	
10:21:00	22	7.3				43	60.0	0.7	0.2	100	43	60	0.7	0.2	
10:23:00	23	7.2	11	5.1	2.2	0.5	64	54.9	1.2	0.3	92	75	60	1.3	0.3
10:25:00	24	7.1	50	60.0	0.8	0.2				0	50	60	0.8	0.2	
10:27:00	25	7.0				21	30.0	0.7	0.2	100	21	30	0.7	0.2	
10:29:00	26	6.9	206	60.0	3.4	0.8				0	206	60	3.4	0.8	
10:31:00	27	6.7				50	30.0	1.7	0.4	100	50	30	1.7	0.4	
10:33:00	28	6.6	21	60.0	0.4	0.1				0	21	60	0.4	0.1	
10:35:00	29	6.5				21	60.0	0.4	0.1	100	21	60	0.4	0.1	
10:37:00	30	6.4				7	60.0	0.1	0.0	100	7	60	0.1	0.0	

Table 1. cont.

TIME (H)	FISH NO.	TOP DO2 (MG/L)	BOTTOM TWO ZONES				TOP ZONE				% TIME TOP	TOT DIST (CM)	TOT OBS (S)	OVERALL CM/S BLENS
			CM	S	CM/S	BLENS	CM	S	CM/S	BLENS				
MEAN	6.9		72	46.3	1.7	0.4	34	50.7	0.7	0.2	77	53	54	1.0 0.2
S.D.	0.4		91	27.5	1.4	0.3	20	14.3	0.5	0.1	43	57	13	1.0 0.2
MIN	6.4		11	5.1	0.4	0.1	7	30.0	0.1	0.0	0	7	30	0.1 0.0
MAX	7.5		206	60.0	3.4	0.8	64	60.0	1.7	0.4	100	206	60	3.4 0.8
10:50:00	31	5.7					190	60.0	3.2	0.7	100	190	60	3.2 0.7
10:52:00	32	5.6					36	60.0	0.6	0.1	100	36	60	0.6 0.1
10:55:00	33	5.5					25	60.0	0.4	0.1	100	25	60	0.4 0.1
10:58:00	34	5.3	25	60.0	0.4	0.1					0	25	60	0.4 0.1
11:02:00	35	5.2					28	60.0	0.5	0.1	100	28	60	0.5 0.1
11:06:00	36	5.1					21	30.0	0.7	0.2	100	21	30	0.7 0.2
11:08:00	37	5.0					18	30.0	0.6	0.1	100	18	30	0.6 0.1
11:10:00	38	4.9	7	5.5	1.3	0.3	138	54.5	2.5	0.6	91	145	60	2.4 0.5
11:13:00	39	4.9	142	60.0	2.4	0.5					0	142	60	2.4 0.5
11:16:00	40	4.7					39	30.0	1.3	0.3	100	39	30	1.3 0.3
MEAN	5.2		58	41.8	1.4	0.3	62	48.1	1.2	0.3	89	67	51	1.2 0.3
S.D.	0.3		73	31.5	1.0	0.2	65	15.1	1.1	0.2	37	65	14	1.0 0.2
MIN	4.7		7	5.5	0.4	0.1	18	30.0	0.4	0.1	0	18	30	0.4 0.1
MAX	5.7		142	60.0	2.4	0.5	190	60.0	3.2	0.7	100	190	60	3.2 0.7
11:25:00	41	4.5					28	60.0	0.5	0.1	100	28	60	0.5 0.1
11:27:00	42	4.4					43	60.0	0.7	0.2	100	43	60	0.7 0.2
11:30:00	43	4.3	21	60.0	0.4	0.1					0	21	60	0.4 0.1
11:32:00	44	4.2	4	1.1	3.6	0.8	114	58.9	1.9	0.4	98	118	60	2.0 0.4
MEAN	4.4		13	30.6	2.0	0.4	62	59.6	1.0	0.2	83	53	60	0.9 0.2
S.D.	0.1		12	41.6	2.3	0.5	46	0.6	0.8	0.2	44	45	0	0.7 0.2
MIN	4.2		4	1.1	0.4	0.1	28	58.9	0.5	0.1	0	21	60	0.4 0.1
MAX	4.5		21	60.0	3.6	0.8	114	60.0	1.9	0.4	100	118	60	2.0 0.4
11:41:00	45	4.0	1	7.2	0.1	0.0	4	22.8	0.2	0.0	76	5	30	0.2 0.0
11:43:00	46	3.9					32	30.0	1.1	0.2	100	32	30	1.1 0.2
11:45:00	47	3.8					14	30.0	0.5	0.1	100	14	30	0.5 0.1
11:47:00	48	3.8					32	30.0	1.1	0.2	100	32	30	1.1 0.2
11:49:00	49	3.7	21	30.0	0.7	0.2					0	21	30	0.7 0.2
11:52:00	50	3.7	85	56.0	1.5	0.3	28	4.0	7.0	1.6	7	113	60	1.9 0.4
11:54:00	51	3.7					21	30.0	0.7	0.2	100	21	30	0.7 0.2
11:56:00	52	3.6	7	30.0	0.2	0.1	60	5.6	10.7	2.4	0	7	30	0.2 0.1
11:58:00	53	3.6	110	24.4	4.5	1.0					19	170	30	5.7 1.3
12:00:00	54	3.5					21	30.0	0.7	0.2	100	21	30	0.7 0.2
MEAN	3.7		45	29.5	1.4	0.3	27	22.8	2.7	0.6	67	44	33	1.3 0.3
S.D.	0.1		49	17.5	1.8	0.4	17	11.4	3.9	0.9	40	54	9	1.6 0.4
MIN	3.5		1	7.2	0.1	0.0	4	4.0	0.2	0.0	0	5	30	0.2 0.0
MAX	4.0		110	56.0	4.5	1.0	60	30.0	10.7	2.4	100	170	60	5.7 1.3

Table 1. cont.

TIME (H)	FISH NO.	TOP DO2 (MG/L)	BOTTOM TWO ZONES				TOP ZONE				% TIME TOP	TOT DIST (CM)	TOT OBS (S)	OVERALL CM/S BLENS				
			CM	S	CM/S BLENS		CM	S	CM/S BLENS									
					CM	S			CM	S								
12:07:00	55	3.4					60	60.0	1.0	0.2	100	60	60	1.0	0.2			
12:09:00	56	3.4	7	30.0	0.2	0.1					0	7	30	0.2	0.1			
12:11:00	57	3.3	142	60.0	2.4	0.5					0	142	60	2.4	0.5			
12:13:00	58	3.3	1	30.0	0.0	0.0					0	1	30	0.0	0.0			
12:15:00	59	3.2					7	30.0	0.2	0.1	100	7	30	0.2	0.1			
12:19:00	60	3.2	1	0.6	1.7	0.4	18	29.4	0.6	0.1	98	19	30	0.6	0.1			
12:21:00	61	3.1					4	30.0	0.1	0.0	100	4	30	0.1	0.0			
12:23:00	62	3.1	225	60.0	3.8	0.8					0	225	60	3.8	0.8			
12:25:00	63	3.0	89	60.0	1.5	0.3					0	89	60	1.5	0.3			
12:28:00	64	3.0	7	30.0	0.2	0.1					0	7	30	0.2	0.1			
MEAN		3.2	67	38.7	1.4	0.3	22	37.4	0.5	0.1	33	56	42	1.0	0.2			
S.D.		0.1	88	22.5	1.4	0.3	26	15.1	0.4	0.1	45	76	15	1.2	0.3			
MIN		3.0	1	0.6	0.0	0.0	4	29.4	0.1	0.0	0	1	30	0.0	0.0			
MAX		3.4	225	60.0	3.8	0.8	60	60.0	1.0	0.2	100	225	60	3.8	0.8			
13:01:00	65	4.7	43	56.3	0.8	0.2	57	3.7	15.4	3.4	6	100	60	1.7	0.4			
13:03:00	66	4.9	32	60.0	0.5	0.1					0	32	60	0.5	0.1			
13:05:00	67	5.0	32	60.0	0.5	0.1					0	32	60	0.5	0.1			
13:07:00	68	5.1	14	60.0	0.2	0.1					0	14	60	0.2	0.1			
13:09:00	69	5.2	36	60.0	0.6	0.1					0	36	60	0.6	0.1			
13:12:00	70	5.3					39	60.0	0.7	0.1	100	39	60	0.7	0.1			
13:15:00	71	5.5	39	60.0	0.7	0.1					0	39	60	0.7	0.1			
13:17:00	72	5.7	99	58.4	1.7	0.4	4	1.6	2.5	0.6	3	103	60	1.7	0.4			
13:20:00	73	5.9	160	60.0	2.7	0.6					0	160	60	2.7	0.6			
13:22:00	74	6.0					18	60.0	0.3	0.1	100	18	60	0.3	0.1			
MEAN		5.3	57	59.3	1.0	0.2	30	31.3	4.7	1.1	12	57	60	1.0	0.2			
S.D.		0.4	48	1.3	0.8	0.2	23	33.1	7.2	1.6	37	47	0	0.8	0.2			
MIN		4.7	14	56.3	0.2	0.1	4	1.6	0.3	0.1	0	14	60	0.2	0.1			
MAX		6.0	160	60.0	2.7	0.6	57	60.0	15.4	3.4	100	160	60	2.7	0.6			
13:31:00	75	6.5	11	10.1	1.1	0.2	60	49.9	1.2	0.3	83	71	60	1.2	0.3			
13:33:00	76	6.6	32	60.0	0.5	0.1					0	32	60	0.5	0.1			
13:36:00	77	6.8	50	60.0	0.8	0.2					0	50	60	0.8	0.2			
13:39:00	78	6.9	149	60.0	2.5	0.6					0	149	60	2.5	0.6			
13:41:00	79	7.0	275	60.0	4.6	1.0					0	275	60	4.6	1.0			
13:45:00	80	7.1	82	60.0	1.4	0.3					0	82	60	1.4	0.3			
13:47:00	81	7.2	50	60.0	0.8	0.2					0	50	60	0.8	0.2			
13:49:00	82	7.3					35	60.0	0.6	0.1	100	35	60	0.6	0.1			
13:51:00	83	7.3	43	60.0	0.7	0.2					0	43	60	0.7	0.2			
13:53:00	84	7.4	75	58.7	1.3	0.3	7	1.3	5.4	1.2	2	82	60	1.4	0.3			
MEAN		7.0	85	54.3	1.5	0.3	34	37.1	2.4	0.5	8	87	60	1.4	0.3			
S.D.		0.3	81	16.6	1.3	0.3	27	31.4	2.6	0.6	33	74	0	1.2	0.3			
MIN		6.5	11	10.1	0.5	0.1	7	1.3	0.6	0.1	0	32	60	0.5	0.1			
MAX		7.4	275	60.0	4.6	1.0	60	60.0	5.4	1.2	100	275	60	4.6	1.0			

Table 1. cont.

TIME (H)	FISH NO.	TOP DO2 (MG/L)	BOTTOM TWO ZONES				TOP ZONE				% TIME TOP	TOT DIST (CM)	TOT OBS (S)	OVERALL CM/S BLEN/S
			CM	S	CM/S	BLEN/S	CM	S	CM/S	BLEN/S				
14:01:00	85	7.7	50	60.0	0.8	0.2					0	50	60	0.8 0.2
14:03:00	86	7.8					135	60.0	2.3	0.5	100	135	60	2.3 0.5
14:07:00	87	8.0	50	60.0	0.8	0.2					0	50	60	0.8 0.2
14:09:00	88	8.1	28	60.0	0.5	0.1					0	28	60	0.5 0.1
14:11:00	89	8.2	60	60.0	1.0	0.2					0	60	60	1.0 0.2
14:14:00	90	8.3	43	60.0	0.7	0.2					0	43	60	0.7 0.2
14:16:00	91	8.3	32	60.0	0.5	0.1					0	32	60	0.5 0.1
14:20:00	92	8.4	32	60.0	0.5	0.1					0	32	60	0.5 0.1
14:23:00	93	8.5	190	60.0	3.2	0.7					0	190	60	3.2 0.7
14:26:00	94	8.6					103	60.0	1.7	0.4	100	103	60	1.7 0.4
MEAN	8.2		61	60.0	1.0	0.2	119	60.0	2.0	0.4	10	72	60	1.2 0.3
S.D.	0.3		53	0.0	0.9	0.2	23	0.0	0.4	0.1	38	54	0	0.9 0.2
MIN	7.7		28	60.0	0.5	0.1	103	60.0	1.7	0.4	0	28	60	0.5 0.1
MAX	8.6		190	60.0	3.2	0.7	135	60.0	2.3	0.5	100	190	60	3.2 0.7
14:57:00	95	9.3					185	60.0	3.1	0.7	100	185	60	3.1 0.7
15:00:00	96	9.4	400	60.0	6.7	1.5					0	400	60	6.7 1.5
15:03:00	97	9.5	67	56.4	1.2	0.3	11	3.6	3.1	0.7	6	78	60	1.3 0.3
15:06:00	98	9.5	28	60.0	0.5	0.1					0	28	60	0.5 0.1
15:09:00	99	9.6					255	60.0	4.3	1.0	100	255	60	4.3 1.0
15:13:00	100	9.6					50	60.0	0.8	0.2	100	50	60	0.8 0.2
15:16:00	101	9.6	25	60.0	0.4	0.1					0	25	60	0.4 0.1
15:19:00	102	9.6	350	60.0	5.8	1.3					0	350	60	5.8 1.3
15:22:00	103	9.6	10	3.2	3.1	0.7	115	56.8	2.0	0.5	95	125	60	2.1 0.5
15:25:00	104	10.0	53	60.0	0.9	0.2					0	53	60	0.9 0.2
MEAN	9.6		133	51.4	2.7	0.6	123	48.1	2.6	0.6	35	155	60	2.6 0.6
S.D.	0.2		167	21.3	2.6	0.6	99	24.9	1.3	0.3	44	138	0	2.3 0.5
MIN	9.3		10	3.2	0.4	0.1	11	3.6	0.8	0.2	0	25	60	0.4 0.1
MAX	10.0		400	60.0	6.7	1.5	255	60.0	4.3	1.0	100	400	60	6.7 1.5

Table 1. cont.

EXPT NO: 91-06
APRIL 24, 1991 SIMULATED CONDITION:
 MEAN LEN: 6.3 cm RIVERINE (STABLE FRESH WATER 'FW ST')

TIME (H)	FISH NO.	TOP DO2 (MG/L)	BOTTOM TWO ZONES				TOP ZONE				% TIME TOP	TOT DIST (CM)	TOT OBS (S)	OVERALL CM/S BLENS	
			CM	S	CM/S BLENS		CM	S	CM/S BLENS						
14:22:00	1		700	43.7	16.0	3.58	110	16.3	6.7	1.5	27	810	60	13.5	3.0
14:24:00	2		460	29.9	15.4	3.4	10	0.1	100.0	22.4	0	470	30	15.7	3.5
14:26:00	3						150	60.0	2.5	0.6	100	150	60	2.5	0.6
14:29:00	4						615	60.0	10.3	2.3	100	615	60	10.3	2.3
14:31:00	5		385	26.7	14.4	3.2	140	33.3	4.2	0.9	56	525	60	8.8	2.0
14:34:00	6		450	25.0	18.0	4.0	450	35.0	12.9	2.9	58	900	60	15.0	3.4
14:36:00	7						275	60.0	4.6	1.0	100	275	60	4.6	1.0
14:38:00	8		240	60.0	4.0	0.9					0	240	60	4.0	0.9
14:40:00	9		765	60.0	12.8	2.9					0	765	60	12.8	2.9
14:42:00	10		25	1.9	13.2	2.9	65	58.1	1.1	0.3	97	90	60	1.5	0.3
14:44:00	11		340	25.2	13.5	3.0	395	34.8	11.4	2.5	58	735	60	12.3	2.7
14:46:00	12		485	26.3	18.4	4.1	430	33.7	12.8	2.9	56	915	60	15.3	3.4
14:48:00	13						95	60.0	1.6	0.4	100	95	60	1.6	0.4
14:50:00	14		520	51.6	10.1	2.3	100	8.4	11.9	2.7	14	620	60	10.3	2.3
14:52:00	15		850	46.2	18.4	4.1	265	13.8	19.2	4.3	23	1115	60	18.6	4.2
14:54:00	16						150	60.0	2.5	0.6	100	150	60	2.5	0.6
14:56:00	17		340	16.0	21.3	4.8	360	44.0	8.2	1.8	73	700	60	11.7	2.6
14:58:00	18		750	41.0	18.3	4.1	290	19.0	15.3	3.4	32	1040	60	17.3	3.9
15:00:00	19		640	45.2	14.2	3.2	170	14.8	11.5	2.6	25	810	60	13.5	3.0
15:02:00	20		130	60.0	2.2	0.5					0	130	60	2.2	0.5
15:04:00	21		700	54.3	12.9	2.9	70	5.7	12.3	2.7	10	770	60	12.8	2.9
15:06:00	22		530	39.3	13.5	3.0	260	20.7	12.6	2.8	35	790	60	13.2	2.9
15:08:00	23						190	60.0	3.2	0.7	100	190	60	3.2	0.7
15:10:00	24		440	41.7	10.6	2.4	360	18.3	19.7	4.4	30	800	60	13.3	3.0
15:12:00	25		430	31.2	13.8	3.1	340	28.8	11.8	2.6	48	770	60	12.8	2.9
15:14:00	26						60	60.0	1.0	0.2	100	60	60	1.0	0.2
15:16:00	27		695	35.0	19.9	4.4	320	25.0	12.8	2.9	42	1015	60	16.9	3.8
15:18:00	28		90	21.4	4.2	0.9	90	38.6	2.3	0.5	64	180	60	3.0	0.7
15:20:00	29		830	57.1	14.5	3.3	25	2.9	8.6	1.9	5	855	60	14.3	3.2
15:22:00	30		610	60.0	10.2	2.3					0	610	60	10.2	2.3
MEAN			496	39.1	13.5	3.0	223	33.5	12.3	2.8	50	573	59	9.8	2.2
S.D.			233	16.1	5.0	1.1	154	20.8	18.7	4.2	32	331	5	5.6	1.3
MIN			25	1.9	2.2	0.5	10	0.1	1.0	0.2	0	60	30	1.0	0.2
MAX			850	60.0	21.3	4.8	615	60.0	100.0	22.4	100	1115	60	18.6	4.2

Table 1. cont.

EXPT NO: 91-06
APRIL 25, 1991 SIMULATED CONDITION:
 MEAN LEN: 6.3 cm BRACKISH WATER TRANSITION (SALT WATER ADDITION 'SW ADD')

TIME (H)	FISH NO.	TOP DO2 (MG/L)	BOTTOM TWO ZONES				TOP ZONE				% TIME TOP	TOT DIST (CM)	TOT OBS (S)	OVERALL CM/S BLEN/S				
			CM	S	CM/S BLEN/S		CM	S	CM/S BLEN/S									
08:31:00	1						440	60.0	7.3	1.6	100	440	60	7.3	1.6			
08:32:30	2	240	60.0	4.0	0.9						0	240	60	4.0	0.9			
08:34:00	3	290	60.0	4.8	1.1						0	290	60	4.8	1.1			
08:35:30	4	470	60.0	7.8	1.8						0	470	60	7.8	1.8			
08:37:00	5	140	30.0	4.7	1.0						0	140	30	4.7	1.0			
08:38:30	6	310	26.6	11.7	2.6	70	3.4	20.6	4.6		11	380	30	12.7	2.8			
08:39:30	7	260	30.0	8.7	1.9						0	260	30	8.7	1.9			
08:40:30	8	220	30.0	7.3	1.6						0	220	30	7.3	1.6			
08:41:30	9	175	30.0	5.8	1.3						0	175	30	5.8	1.3			
08:42:30	10	355	30.0	11.8	2.6						0	355	30	11.8	2.6			
08:44:00	11	295	30.0	9.8	2.2						0	295	30	9.8	2.2			
08:45:00	12	270	30.0	9.0	2.0						0	270	30	9.0	2.0			
08:46:00	13	380	30.0	12.7	2.8						0	380	30	12.7	2.8			
08:47:00	14	155	30.0	5.2	1.2						0	155	30	5.2	1.2			
08:48:00	15	410	27.6	14.9	3.3	40	2.4	16.7	3.7		8	450	30	15.0	3.4			
08:49:30	16	240	30.0	8.0	1.8						0	240	30	8.0	1.8			
08:50:30	17	220	30.0	7.3	1.6						0	220	30	7.3	1.6			
08:51:30	18	335	30.0	11.2	2.5						0	335	30	11.2	2.5			
08:52:30	19	290	30.0	9.7	2.2						0	290	30	9.7	2.2			
08:53:30	20	290	30.0	9.7	2.2						0	290	30	9.7	2.2			
08:55:00	21	250	30.0	8.3	1.9						0	250	30	8.3	1.9			
08:56:00	22	280	30.0	9.3	2.1						0	280	30	9.3	2.1			
08:57:00	23	50	30.0	1.7	0.4						0	50	30	1.7	0.4			
08:58:00	24	195	23.1	8.4	1.9	30	6.9	4.3	1.0		23	225	30	7.5	1.7			
08:59:00	25	230	26.3	8.7	2.0	10	3.7	2.7	0.6		12	240	30	8.0	1.8			
10:10:00	26	40	30.0	1.3	0.3						0	40	30	1.3	0.3			
10:11:00	27					70	30.0	2.3	0.5		100	70	30	2.3	0.5			
10:12:00	28	90	30.0	3.0	0.7						0	90	30	3.0	0.7			
10:13:00	29	390	23.1	16.9	3.8	70	6.9	10.1	2.3		23	460	30	15.3	3.4			
10:14:00	30					35	30.0	1.2	0.3		100	35	30	1.2	0.3			
MEAN		254	32.5	8.2	1.8	96	17.9	8.2	1.8		5	255	34.0	7.7	1.7			
S.D.		104	10.1	3.7	0.8	141	20.6	7.2	1.6		28	124	10.37	3.8	0.9			
MIN		40	23.1	1.3	0.3	10	2.4	1.2	0.3		0	35	30	1.2	0.3			
MAX		470	60.0	16.9	3.8	440	60.0	20.6	4.6		100	470	60	15.3	3.4			

Table 1. cont.

EXPT NO: 91-06 APRIL 25, 1991			SIMULATED CONDITION: MEAN LEN: 6.3 cm		STABLE ESTUARINE CONDITIONS (STABLE SALT WATER 'SW ST')									
TIME (H)	FISH NO.	TOP DO2 (MG/L)	BOTTOM TWO ZONES				TOP ZONE				% TIME TOP	TOT DIST (CM)	TOT OBS (S)	OVERALL CM/S BLEN/S
			CM	S	CM/S BLEN/S		CM	S	CM/S BLEN/S					
14:15:00	1		70	47.7	1.47	0.3	340	12.3	27.6	6.2	21	410	60	6.8 1.5
14:17:00	2		150	60.0	2.5	0.6					0	150	60	2.5 0.6
14:19:00	3		250	17.5	14.3	3.2	370	42.5	8.7	1.9	71	620	60	10.3 2.3
14:21:00	4		140	14.0	10.0	2.2	310	46.0	6.7	1.5	77	450	60	7.5 1.7
14:23:00	5		770	58.1	13.3	3.0	15	1.9	7.9	1.8	3	785	60	13.1 2.9
14:25:00	6		20	5.0	4.0	0.9	25	55.0	0.5	0.1	92	45	60	0.8 0.2
14:27:00	7		60	60.0	1.0	0.2					0	60	60	1.0 0.2
14:29:00	8		80	60.0	1.3	0.3					0	80	60	1.3 0.3
14:31:00	9		1	0.2	5.0	1.1	100	59.8	1.7	0.4	100	101	60	1.7 0.4
14:33:00	10		695	56.9	12.2	2.7	30	3.1	9.7	2.2	5	725	60	12.1 2.7
14:36:00	11		45	5.1	8.8	2.0	70	54.9	1.3	0.3	92	115	60	1.9 0.4
14:38:00	12		60	60.0	1.0	0.2					0	60	60	1.0 0.2
14:40:00	13		655	60.0	10.9	2.4					0	655	60	10.9 2.4
14:42:00	14						115	60.0	1.9	0.4	100	115	60	1.9 0.4
14:44:00	15						110	60.0	1.8	0.4	100	110	60	1.8 0.4
14:46:00	16		620	60.0	10.3	2.3					0	620	60	10.3 2.3
14:48:00	17						60	60.0	1.0	0.2	100	60	60	1.0 0.2
14:50:00	18		205	60.0	3.4	0.8					0	205	60	3.4 0.8
14:52:00	19		105	60.0	1.8	0.4					0	105	60	1.8 0.4
14:54:00	20						60	60.0	1.0	0.2	100	60	60	1.0 0.2
14:56:00	21		5	2.9	1.7	0.4	150	57.1	2.6	0.6	95	155	60	2.6 0.6
14:58:00	22		830	60.0	13.8	3.1					0	830	60	13.8 3.1
15:00:00	23		70	60.0	1.2	0.3					0	70	60	1.2 0.3
15:04:00	24		760	60.0	12.7	2.8					0	760	60	12.7 2.8
15:07:00	25		600	60.0	10.0	2.2					0	600	60	10.0 2.2
15:09:00	26		110	60.0	1.8	0.4					0	110	60	1.8 0.4
15:11:00	27						30	60.0	0.5	0.1	100	30	60	0.5 0.1
15:13:00	28		550	59.0	9.3	2.1	1	1.0	1.0	0.2	2	551	60	9.2 2.1
15:15:00	29		85	60.0	1.4	0.3					0	85	60	1.4 0.3
15:17:00	30		300	60.0	5.0	1.1					0	300	60	5.0 1.1
MEAN			289	46.7	6.3	1.4	119	42.2	4.9	1.1	27	301	60	5.0 1.1
S.D.			290	22.8	4.9	1.1	122	24.2	7.1	1.6	39	276	0	4.6 1.0
MIN			1	0.2	1.0	0.2	1	1.0	0.5	0.1	0	30	60	0.5 0.1
MAX			830	60.0	14.3	3.2	370	60.0	27.6	6.2	100	830	60	13.8 3.1

Table 1. cont.

EXPT NO: 91-06 APRIL 26, 1991			SIMULATED CONDITION: MEAN LEN: 6.3 cm				HYPOXIA IN THE FRESH WATER ZONE (DISSOLVED OXYGEN REDUCTION 'DO2 RED')									
TIME (H)	FISH NO.	TOP DO2 (MG/L)	BOTTOM TWO ZONES				TOP ZONE				% TIME TOP	TOT DIST (CM)	TOT OBS (S)	OVERALL		
			CM	S	CM/S	BLEN/S	CM	S	CM/S	BLEN/S				CM/S	BLEN/S	
09:00:00	1	11.1					100	60.0	1.7	0.4	100	100	60	1.7	0.4	
09:02:00	2	11.1	520	60.0	8.7	1.9					0	520	60	8.7	1.9	
09:04:30	3	11.1	1	1.4	0.7	0.2	240	58.6	4.1	0.9	98	241	60	4.0	0.9	
09:06:00	4	11.1					30	60.0	0.5	0.1	100	30	60	0.5	0.1	
09:08:00	5	11.2					55	60.0	0.9	0.2	100	55	60	0.9	0.2	
09:10:00	6	11.1					70	60.0	1.2	0.3	100	70	60	1.2	0.3	
09:12:00	7	11.2	50	60.0	0.8	0.2					0	50	60	0.8	0.2	
09:14:00	8	11.2	495	33.0	15.0	3.4	200	27.0	7.4	1.7	45	695	60	11.6	2.6	
09:16:00	9	11.2	200	14.7	13.6	3.0	145	45.3	3.2	0.7	76	345	60	5.8	1.3	
09:18:00	10						30	60.0	0.5	0.1	100	30	60	0.5	0.1	
		MEAN	10.0	253	33.8	7.8	1.7	109	53.9	2.4	0.5	80	214	60	3.6	0.8
		S.D.	3.5	244	26.4	6.8	1.5	79	12.0	2.4	0.5	37	235	0	3.9	0.9
		MIN	11.1	1	1.4	0.7	0.2	30	27.0	0.5	0.1	0	30	60	0.5	0.1
		MAX	11.2	520	60.0	15.0	3.4	240	60.0	7.4	1.7	100	695	60	11.6	2.6
09:46:00	11	10.2					150	60.0	2.5	0.6	100	150	60	2.5	0.6	
09:48:00	12	10.0	470	56.6	8.3	1.9	25	3.4	7.4	1.6	6	495	60	8.3	1.8	
09:50:00	13	9.9					210	60.0	3.5	0.8	100	210	60	3.5	0.8	
09:52:00	14	9.8					60	60.0	1.0	0.2	100	60	60	1.0	0.2	
09:54:00	15	9.7					30	60.0	0.5	0.1	100	30	60	0.5	0.1	
09:56:00	16	9.5					60	60.0	1.0	0.2	100	60	60	1.0	0.2	
09:58:00	17	9.3	660	53.6	12.3	2.8	60	6.4	9.4	2.1	11	720	60	12.0	2.7	
10:00:00	18	9.2					100	60.0	1.7	0.4	100	100	60	1.7	0.4	
10:02:00	19	9.0					270	60.0	4.5	1.0	100	270	60	4.5	1.0	
10:04:00	20	8.9	50	60.0	0.8	0.2					0	50	60	0.8	0.2	
		MEAN	9.6	393	56.7	7.2	1.6	107	47.8	3.5	0.8	84	215	60	3.6	0.8
		S.D.	0.4	312	3.2	5.8	1.3	85	24.3	3.1	0.7	38	227	0	3.8	0.8
		MIN	8.9	50	53.6	0.8	0.2	25	3.4	0.5	0.1	0	30	60	0.5	0.1
		MAX	10.2	660	60.0	12.3	2.8	270	60.0	9.4	2.1	100	720	60	12.0	2.7
10:22:00	21	7.5					60	60.0	1.0	0.2	100	60	60	1.0	0.2	
10:24:00	22	7.4	40	7.0	5.7	1.3	155	53.0	2.9	0.7	88	195	60	3.3	0.7	
10:26:00	23	7.3					210	60.0	3.5	0.8	100	210	60	3.5	0.8	
10:28:00	24	7.1					160	60.0	2.7	0.6	100	160	60	2.7	0.6	
10:30:00	25	7.0	330	55.8	5.9	1.3	20	4.2	4.8	1.1	7	350	60	5.8	1.3	
10:33:00	26	6.8					40	60.0	0.7	0.1	100	40	60	0.7	0.1	
10:36:00	27	6.7	40	60.0	0.7	0.1					0	40	60	0.7	0.1	
10:38:00	28	6.6	530	47.8	11.1	2.5	85	12.2	7.0	1.6	20	615	60	10.3	2.3	
10:40:00	29	6.5					40	60.0	0.7	0.1	100	40	60	0.7	0.1	
10:42:00	30	6.4	80	54.3	1.5	0.3	30	5.7	5.3	1.2	10	110	60	1.8	0.4	

Table 1. cont.

TIME (H)	FISH NO.	TOP DO2 (MG/L)	BOTTOM TWO ZONES				TOP ZONE				% TIME TOP	TOT DIST (CM)	TOT OBS (S)	OVERALL CM/S BLEN/S
			CM	S	CM/S	BLEN/S	CM	S	CM/S	BLEN/S				
MEAN	6.9		204	45.0	5.0	1.1	89	41.7	3.2	0.7	72	182	60	3.0 0.7
S.D.	0.4		219	21.7	4.2	0.9	69	25.9	2.2	0.5	38	182	0	3.0 0.7
MIN	6.4		40	7.0	0.7	0.1	20	4.2	0.7	0.1	0	40	60	0.7 0.1
MAX	7.5		530	60.0	11.1	2.5	210	60.0	7.0	1.6	100	615	60	10.3 2.3
10:56:00	31	5.8					20	60.0	0.3	0.1	100	20	60	0.3 0.1
10:58:00	32	5.7					20	60.0	0.3	0.1	100	20	60	0.3 0.1
11:00:00	33	5.6	90	4.8	18.8	4.2	80	55.2	1.4	0.3	92	170	60	2.8 0.6
11:02:00	34	5.5	415	60.0	6.9	1.5					0	415	60	6.9 1.5
11:04:00	35	5.4					60	60.0	1.0	0.2	100	60	60	1.0 0.2
11:08:00	36	5.3	210	60.0	3.5	0.8	180	35.6	5.1	1.1	0	210	60	3.5 0.8
11:12:00	37	5.1	190	24.4	7.8	1.7	45	60.0	0.8	0.2	59	370	60	6.2 1.4
11:15:00	38	5.0					20	0.7	28.6	6.4	100	45	60	0.8 0.2
11:19:00	39	4.8	40	59.3	0.7	0.2	120	60.0	2.0	0.4	1	60	60	1.0 0.2
11:22:00	40	4.8									100	120	60	2.0 0.4
MEAN	5.3		189	41.7	7.5	1.7	68	48.9	4.9	1.1	72	149	60	2.5 0.6
S.D.	0.4		144	25.7	6.9	1.5	57	21.2	9.7	2.2	41	143	0	2.4 0.5
MIN	4.8		40	4.8	0.7	0.2	20	0.7	0.3	0.1	0	20	60	0.3 0.1
MAX	5.8		415	60.0	18.8	4.2	180	60.0	28.6	6.4	100	415	60	6.9 1.5
11:34:00	41	5.8	340	54.7	6.2	1.4	25	5.3	4.7	1.1	9	365	60	6.1 1.4
11:36:00	42	5.7	20	48.0	0.4	0.1	15	12.0	1.3	0.3	20	35	60	0.6 0.1
11:38:00	43	5.6	670	52.4	12.8	2.9	130	7.6	17.1	3.8	13	800	60	13.3 3.0
11:40:00	44	5.5	350	34.4	10.2	2.3	150	25.6	5.9	1.3	43	500	60	8.3 1.9
MEAN	5.7		345	47.4	7.4	1.7	80	12.6	7.2	1.6	20	425	60	7.1 1.6
S.D.	0.1		265	9.1	5.4	1.2	70	9.1	6.9	1.5	10	317	0	5.3 1.2
MIN	5.5		20	34.4	0.4	0.1	15	5.3	1.3	0.3	9	35	60	0.6 0.1
MAX	5.8		670	54.7	12.8	2.9	150	25.6	17.1	3.8	43	800	60	13.3 3.0
11:48:00	45	4.1					60	60.0	1.0	0.2	100	60	60	1.0 0.2
11:51:00	46	4.1	180	44.1	4.1	0.9	170	15.9	10.7	2.4	26	350	60	5.8 1.3
11:53:00	47	4.0	85	60.0	1.4	0.3					0	85	60	1.4 0.3
11:55:00	48	4.0	320	60.0	5.3	1.2					0	320	60	5.3 1.2
11:57:00	49	3.9	640	60.0	10.7	2.4					0	640	60	10.7 2.4
12:01:00	50	3.8	750	56.1	13.4	3.0	20	3.9	5.1	1.1	7	770	60	12.8 2.9
12:03:00	51	3.7	500	48.8	10.2	2.3	100	11.2	8.9	2.0	19	600	60	10.0 2.2
12:06:00	52	3.7	165	60.0	2.8	0.6					0	165	60	2.8 0.6
12:08:00	53	3.6	740	58.2	12.7	2.8	35	1.8	19.4	4.3	3	775	60	12.9 2.9
12:10:00	54	3.6	40	51.4	0.8	0.2	40	8.6	4.7	1.0	14	80	60	1.3 0.3
MEAN	3.9		380	55.4	6.8	1.5	71	16.9	8.3	1.9	11	385	60	6.4 1.4
S.D.	0.2		283	5.9	5.0	1.1	56	21.7	6.4	1.4	27	289	0	4.8 1.1
MIN	3.6		40	44.1	0.8	0.2	20	1.8	1.0	0.2	0	60	60	1.0 0.2
MAX	4.1		750	60.0	13.4	3.0	170	60.0	19.4	4.3	100	775	60	12.9 2.9

Table 1. cont.

TIME (H)	FISH NO.	TOP DO2 (MG/L)	BOTTOM TWO ZONES				TOP ZONE				% TIME TOP	TOT DIST (CM)	TOT OBS (S)	OVERALL CM/S BLENS	
			CM	S	CM/S	BLENS	CM	S	CM/S	BLENS					
12:17:00	55	3.5	240	60.0	4.0	0.9					0	240	60	4.0	0.9
12:19:00	56	3.5					60	60.0	1.0	0.2	100	60	60	1.0	0.2
12:21:00	57	3.5	540	56.8	9.5	2.1	60	3.2	18.8	4.2	5	600	60	10.0	2.2
12:23:00	58	3.4	450	60.0	7.5	1.7					0	450	60	7.5	1.7
12:25:00	59	3.4	30	55.5	0.5	0.1	10	4.5	2.2	0.5	8	40	60	0.7	0.1
12:26:40	60	3.4	330	60.0	5.5	1.2					0	330	60	5.5	1.2
12:28:00	61	3.3					45	60.0	0.8	0.2	100	45	60	0.8	0.2
12:30:30	62	3.3	30	51.8	0.6	0.1	20	8.2	2.4	0.5	14	50	60	0.8	0.2
12:32:00	63	3.3	550	60.0	9.2	2.1					0	550	60	9.2	2.1
12:34:00	64	3.3	75	50.7	1.5	0.3	50	9.3	5.4	1.2	16	125	60	2.1	0.5
	MEAN	3.4	281	56.9	4.8	1.1	41	24.2	5.1	1.1	18	249	60	4.2	0.9
	S.D.	0.1	221	3.9	3.7	0.8	21	27.8	6.9	1.5	35	220	0	3.7	0.8
	MIN	3.3	30	50.7	0.5	0.1	10	3.2	0.8	0.2	0	40	60	0.7	0.1
	MAX	3.5	550	60.0	9.5	2.1	60	60.0	18.8	4.2	100	600	60	10.0	2.2
							65	60.0	1.1	0.2	100	65	60	1.1	0.2
13:00:30	65	4.9					110	60.0	1.8	0.4	100	110	60	1.8	0.4
13:01:40	66	5.0					15	22.4	0.7	0.1	37	35	60	0.6	0.1
13:03:00	67	5.2	20	37.6	0.5	0.1					0	380	60	6.3	1.4
13:04:30	68	5.3	380	60.0	6.3	1.4					3	285	60	4.8	1.1
13:06:00	69	5.4	280	58.3	4.8	1.1	5	1.7	2.9	0.7	21	460	60	7.7	1.7
13:08:00	70	5.4	360	47.1	7.6	1.7	100	12.9	7.8	1.7	0	470	60	7.8	1.8
13:10:00	71	5.5	470	60.0	7.8	1.8					100	60	60	1.0	0.2
13:11:30	72	5.6					60	60.0	1.0	0.2	100	60	60	2.3	0.5
13:13:00	73	5.7					140	60.0	2.3	0.5	100	140	60	1.2	0.3
13:14:30	74	5.8	70	60.0	1.2	0.3					0	70	60	7.8	1.8
	MEAN	5.4	263	53.8	4.7	1.1	71	39.6	2.5	0.6	47	208	60	3.5	0.8
	S.D.	0.3	180	9.4	3.2	0.7	50	26.2	2.4	0.5	42	174	0	2.9	0.6
	MIN	4.9	20	37.6	0.5	0.1	5	1.7	0.7	0.1	0	35	60	0.6	0.1
	MAX	5.8	470	60.0	7.8	1.8	140	60.0	7.8	1.7	100	470	60	7.8	1.8
							170	57.0	3.0	0.7	95	175	60	2.9	0.7
13:27:00	75	4.9	5	3.0	1.7	0.4					100	55	60	0.9	0.2
13:29:00	76	5.0					55	60.0	0.9	0.2	100	70	60	1.2	0.3
13:33:00	77	5.2					70	60.0	1.2	0.3	100	88	180	3.0	0.7
13:35:00	78	5.3	80	7.0	11.4	2.6	100	53.0	1.9	0.4	100	85	60	1.4	0.3
13:38:00	79	5.4					85	60.0	1.4	0.3	100	770	60	12.8	2.9
13:42:00	80	5.4	650	52.0	12.5	2.8	120	8.0	15.0	3.4	13	350	60	5.8	1.3
13:44:00	81	5.5	300	55.3	5.4	1.2	50	4.7	10.6	2.4	8	630	60	10.5	2.3
13:46:00	82	5.6	610	58.8	10.4	2.3	20	1.2	16.7	3.7	2	225	60	3.8	0.8
13:48:00	83	5.7	35	51.8	0.7	0.2	190	8.2	23.2	5.2	14	770	60	12.8	2.9
	MEAN	5.3	280	38.0	7.0	1.6	96	34.7	8.2	1.8	65	282	60	4.7	1.1
	S.D.	0.3	290	25.7	5.1	1.2	56	27.8	8.4	1.9	36	256	0	4.3	1.0
	MIN	4.9	5	3.0	0.7	0.2	20	1.2	0.9	0.2	2	55	60	0.9	0.2
	MAX	5.7	650	58.8	12.5	2.8	190	60.0	23.2	5.2	100	770	60	12.8	2.9

Table 1. cont.

TIME (H)	FISH NO.	TOP DO ₂ (MG/L)	BOTTOM TWO ZONES				TOP ZONE				% TIME TOP	TOT DIST (CM)	TOT OBS (S)	OVERALL	
			CM	S	CM/S	BLEN/S	CM	S	CM/S	BLEN/S				CM/S	BLEN/S
13:55:00	84	7.8	520	57.1	9.1	2.0	40	2.9	13.8	3.1	5	560	60	9.3	2.1
13:58:00	85	7.9	270	58.7	4.6	1.0	5	1.3	3.8	0.9	2	275	60	4.6	1.0
14:04:00	86	8.1	60	60.0	1.0	0.2					0	60	60	1.0	0.2
14:07:00	87	8.1	170	20.3	8.4	1.9	60	39.7	1.5	0.3	66	230	60	3.8	0.9
14:13:00	88	8.3	370	60.0	6.2	1.4					0	370	60	6.2	1.4
14:18:30	89	8.4	70	6.1	11.5	2.6	160	53.9	3.0	0.7	90	230	60	3.8	0.9
14:20:30	90	8.5					70	60.0	1.2	0.3	100	70	60	1.2	0.3
14:23:00	91	8.6	290	22.5	12.9	2.9	360	37.5	9.6	2.1	63	650	60	10.8	2.4
14:26:00	92	8.7					70	60.0	1.2	0.3	100	70	60	1.2	0.3
14:27:30	93	8.7	70	60.0	1.2	0.3					0	70	60	1.2	0.3
MEAN		8.3	228	43.1	6.8	1.5	109	36.5	4.9	1.1	38	259	60	4.3	1.0
S.D.		0.3	166	22.7	4.4	1.0	120	25.1	4.9	1.1	38	212	0	3.5	0.8
MIN		7.8	60	6.1	1.0	0.2	5	1.3	1.2	0.3	0	60	60	1.0	0.2
MAX		8.7	520	60.0	12.9	2.9	360	60.0	13.8	3.1	100	650	60	10.8	2.4
14:40:00	94	9.1	25	60.0	0.4	0.1					0	25	60	0.4	0.1
14:46:00	95	9.2	75	9.6	7.8	1.7	120	50.4	2.4	0.5	84	195	60	3.3	0.7
14:50:00	96	9.2	10	1.8	5.6	1.2	290	58.2	5.0	1.1	97	300	60	5.0	1.1
14:55:00	97	9.3	530	48.4	11.0	2.4	110	11.6	9.5	2.1	19	640	60	10.7	2.4
15:00:00	98	9.4	60	60.0	1.0	0.2					0	60	60	1.0	0.2
15:08:00	99	9.6					60	60.0	1.0	0.2	100	60	60	1.0	0.2
15:10:00	100	9.7					40	60.0	0.7	0.1	100	40	60	0.7	0.1
15:12:00	101	9.7	520	50.1	10.4	2.3	80	9.9	8.1	1.8	17	600	60	10.0	2.2
15:18:00	102	9.8					90	60.0	1.5	0.3	100	90	60	1.5	0.3
15:20:00	103	9.8	10	60.0	0.2	0.0					0	10	60	0.2	0.0
MEAN		9.5	176	41.4	5.2	1.2	113	44.3	4.0	0.9	53	202	60	3.4	0.8
S.D.		0.3	240	25.0	4.7	1.1	83	23.2	3.6	0.8	40	237	0	4.0	0.9
MIN		9.1	10	1.8	0.2	0.0	40	9.9	0.7	0.1	0	10	60	0.2	0.0
MAX		9.8	530	60.0	11.0	2.4	290	60.0	9.5	2.1	100	640	60	10.7	2.4

Table 1. cont.

EXPT NO: 91-07
MAY 14, 1991 SIMULATED CONDITION:
 MEAN LEN: 4.8 cm RIVERINE (STABLE FRESH WATER 'FW ST')

TIME (H)	FISH NO.	TOP DO2 (MG/L)	BOTTOM TWO ZONES				TOP ZONE				% TIME TOP	TOT DIST (CM)	TOT OBS (S)	OVERALL	
			CM	S	CM/S	BLEN/S	CM	S	CM/S	BLEN/S				CM/S	BLEN/S
14:30:00	1		640	48.3	13.3	2.96	140	11.7	12.0	2.7	20	780	60	13.0	2.9
14:32:00	2		580	50.2	11.6	2.6	270	9.8	27.6	6.2	16	850	60	14.2	3.2
14:34:00	3						400	60.0	6.7	1.5	100	400	60	6.7	1.5
14:36:00	4		280	20.9	13.4	3.0	320	39.1	8.2	1.8	65	600	60	10.0	2.2
14:38:00	5		310	19.2	16.1	3.6	400	40.8	9.8	2.2	68	710	60	11.8	2.6
14:40:00	6		330	29.7	11.1	2.5	130	30.3	4.3	1.0	51	460	60	7.7	1.7
14:45:00	7		200	21.1	9.5	2.1	300	38.9	7.7	1.7	65	500	60	8.3	1.9
14:47:00	8		130	11.9	10.9	2.4	490	48.1	10.2	2.3	80	620	60	10.3	2.3
14:49:00	9		470	42.9	11.0	2.5	65	17.1	3.8	0.9	29	535	60	8.9	2.0
14:51:00	10		440	31.3	14.1	3.1	250	28.7	8.7	1.9	48	690	60	11.5	2.6
14:54:00	11		390	22.7	17.2	3.8	470	37.3	12.6	2.8	62	860	60	14.3	3.2
14:56:00	12		400	60.0	6.7	1.5					0	400	60	6.7	1.5
14:58:00	13		75	6.2	12.1	2.7	450	53.8	8.4	1.9	90	525	60	8.8	2.0
15:00:00	14		330	23.9	13.8	3.1	350	36.1	9.7	2.2	60	680	60	11.3	2.5
15:02:00	15		640	45.8	14.0	3.1	220	14.2	15.5	3.5	24	860	60	14.3	3.2
15:05:00	16		360	24.2	14.9	3.3	390	35.8	10.9	2.4	60	750	60	12.5	2.8
15:07:00	17		890	60.0	14.8	3.3					0	890	60	14.8	3.3
15:09:00	18		310	5.5	56.4	12.6	200	54.5	3.7	0.8	91	510	60	8.5	1.9
15:11:00	19		85	47.2	1.8	0.4	410	12.8	32.0	7.2	21	495	60	8.3	1.8
15:13:00	20		350	42.4	8.3	1.8	240	17.6	13.6	3.1	29	590	60	9.8	2.2
15:15:00	21		320	27.1	11.8	2.6	330	32.9	10.0	2.2	55	650	60	10.8	2.4
15:17:00	22		570	37.9	15.0	3.4	290	22.1	13.1	2.9	37	860	60	14.3	3.2
15:19:00	23		540	37.9	14.2	3.2	250	22.1	11.3	2.5	37	790	60	13.2	2.9
15:21:00	24						470	60.0	7.8	1.8	100	470	60	7.8	1.8
15:23:00	25		480	40.1	12.0	2.7	210	19.9	10.6	2.4	33	690	60	11.5	2.6
15:25:00	26		400	28.1	14.2	3.2	420	31.9	13.2	2.9	53	820	60	13.7	3.1
15:27:00	27		400	27.4	14.6	3.3	300	32.6	9.2	2.1	54	700	60	11.7	2.6
15:29:00	28		350	24.9	14.1	3.1	190	35.1	5.4	1.2	58	540	60	9.0	2.0
15:31:00	29		185	13.4	13.8	3.1	450	46.6	9.7	2.2	78	635	60	10.6	2.4
15:33:00	30						30	60.0	0.5	0.1	100	30	60	0.5	0.1
MEAN			387	31.5	14.1	3.2	301	33.9	10.6	2.4	54	630	60	10.5	2.3
S.D.			182	14.9	9.0	2.0	126	15.3	6.4	1.4	22	185	0	3.1	0.7
MIN			75	5.5	1.8	0.4	30	9.8	0.5	0.1	0	30	60	0.5	0.1
MAX			890	60.0	56.4	12.6	490	60.0	32.0	7.2	100	890	60	14.8	3.3

Table 1. cont.

EXPT NO: 91-07
MAY 15, 1991SIMULATED CONDITION:
MEAN LEN: 4.8 cm

BRACKISH WATER TRANSITION (SALT WATER ADDITION 'SW ADD')

TIME (H)	FISH NO.	TOP DO2 (MG/L)	BOTTOM TWO ZONES				TOP ZONE				% TIME TOP	TOT DIST (CM)	TOT OBS (S)	OVERALL CM/S BLENS
			CM	S	CM/S BLENS		CM	S	CM/S BLENS					
08:31:00	1	280	36.2	7.7	1.7		310	23.8	13.0	2.9	40	590	60	9.8 2.2
08:33:00	2	100	60.0	1.7	0.4						0	100	60	1.7 0.4
08:35:00	3	110	60.0	1.8	0.4						0	110	60	1.8 0.4
08:37:00	4	400	60.0	6.7	1.5						0	400	60	6.7 1.5
08:39:00	5	550	60.0	9.2	2.1						0	550	60	9.2 2.1
08:41:00	6	560	60.0	9.3	2.1						0	560	60	9.3 2.1
08:43:00	7	740	60.0	12.3	2.8						0	740	60	12.3 2.8
08:45:00	8	420	60.0	7.0	1.6						0	420	60	7.0 1.6
08:47:00	9	165	60.0	2.8	0.6						0	165	60	2.8 0.6
08:49:00	10	260	60.0	4.3	1.0						0	260	60	4.3 1.0
08:51:00	11	470	60.0	7.8	1.8						0	470	60	7.8 1.8
08:53:00	12	590	52.6	11.2	2.5	40	7.4	5.4	1.2		12	630	60	10.5 2.3
08:55:00	13	450	60.0	7.5	1.7						0	450	60	7.5 1.7
08:57:00	14	220	60.0	3.7	0.8						0	220	60	3.7 0.8
08:59:00	15	475	57.8	8.2	1.8	15	2.2	6.8	1.5		4	490	60	8.2 1.8
09:01:00	16	200	60.0	3.3	0.7						0	200	60	3.3 0.7
09:03:00	17	390	49.9	7.8	1.7	65	10.1	6.4	1.4		17	455	60	7.6 1.7
09:05:00	18	490	60.0	8.2	1.8						0	490	60	8.2 1.8
09:07:00	19	460	60.0	7.7	1.7						0	460	60	7.7 1.7
09:09:00	20	380	46.2	8.2	1.8	120	13.8	8.7	1.9		23	500	60	8.3 1.9
09:11:00	21	170	46.0	3.7	0.8	35	14.0	2.5	0.6		23	205	60	3.4 0.8
09:13:00	22	400	44.1	9.1	2.0	70	15.9	4.4	1.0		26	470	60	7.8 1.8
09:15:00	23	750	60.0	12.5	2.8						0	750	60	12.5 2.8
09:17:00	24	540	57.5	9.4	2.1	20	2.5	8.0	1.8		4	560	60	9.3 2.1
09:19:00	25	460	36.7	12.5	2.8	335	23.3	14.4	3.2		39	795	60	13.3 3.0
09:21:00	26	200	21.7	9.2	2.1	350	38.3	9.1	2.0		64	550	60	9.2 2.1
09:23:00	27	490	57.1	8.6	1.9	40	2.9	13.8	3.1		5	530	60	8.8 2.0
09:25:00	28	160	60.0	2.7	0.6						0	160	60	2.7 0.6
09:27:00	29	445	60.0	7.4	1.7						0	445	60	7.4 1.7
09:29:00	30	860	60.0	14.3	3.2						0	860	60	14.3 3.2
MEAN		406	54.9	7.5	1.7	127	14.0	8.4	1.9		3	453	60.0	7.5 1.7
S.D.		193	9.5	3.3	0.7	135	11.1	3.9	0.9		15	202	0.00	3.4 0.8
MIN		100	21.7	1.7	0.4	15	2.2	2.5	0.6		0	100	60	1.7 0.4
MAX		860	60.0	14.3	3.2	350	38.3	14.4	3.2		64	860	60	14.3 3.2

Table 1. cont.

EXPT NO: 91-07 MAY 15, 1991			SIMULATED CONDITION: MEAN LEN: 4.8 cm		STABLE ESTUARINE CONDITIONS (STABLE SALT WATER 'SW ST')							
TIME (H)	FISH NO.	TOP DO2 (MG/L)	BOTTOM TWO ZONES			TOP ZONE			% TIME TOP	TOT DIST (CM)	TOT OBS (S)	OVERALL CM/S BLEN/S
			CM	S	CM/S BLEN/S	CM	S	CM/S BLEN/S				
14:30:00	1		75	60.0	1.25	0.3			0	75	60	1.3 0.3
14:32:00	2		60	60.0	1.0	0.2			0	60	60	1.0 0.2
14:34:00	3		140	60.0	2.3	0.5			0	140	60	2.3 0.5
14:36:00	4		90	60.0	1.5	0.3			0	90	60	1.5 0.3
14:38:00	5		50	60.0	0.8	0.2			0	50	60	0.8 0.2
14:40:00	6		45	60.0	0.8	0.2			0	45	60	0.8 0.2
14:42:00	7		55	60.0	0.9	0.2			0	55	60	0.9 0.2
14:44:00	8		155	60.0	2.6	0.6			0	155	60	2.6 0.6
14:46:00	9		40	60.0	0.7	0.1			0	40	60	0.7 0.1
14:48:00	10		160	60.0	2.7	0.6			0	160	60	2.7 0.6
14:50:00	11		100	60.0	1.7	0.4			0	100	60	1.7 0.4
14:52:00	12		95	60.0	1.6	0.4			0	95	60	1.6 0.4
14:54:00	13		25	60.0	0.4	0.1			0	25	60	0.4 0.1
14:56:00	14		100	60.0	1.7	0.4			0	100	60	1.7 0.4
14:58:00	15		190	60.0	3.2	0.7			0	190	60	3.2 0.7
15:00:00	16		100	60.0	1.7	0.4			0	100	60	1.7 0.4
15:02:00	17		230	60.0	3.8	0.9			0	230	60	3.8 0.9
15:04:00	18		100	60.0	1.7	0.4			0	100	60	1.7 0.4
15:06:00	19		40	60.0	0.7	0.1			0	40	60	0.7 0.1
15:08:00	20		265	60.0	4.4	1.0			0	265	60	4.4 1.0
15:10:00	21		430	60.0	7.2	1.6			0	430	60	7.2 1.6
15:12:00	22		50	60.0	0.8	0.2			0	50	60	0.8 0.2
15:14:00	23		170	60.0	2.8	0.6			0	170	60	2.8 0.6
15:16:00	24		90	60.0	1.5	0.3			0	90	60	1.5 0.3
15:18:00	25		150	60.0	2.5	0.6			0	150	60	2.5 0.6
15:20:00	26		50	60.0	0.8	0.2			0	50	60	0.8 0.2
15:22:00	27		170	60.0	2.8	0.6			0	170	60	2.8 0.6
15:24:00	28		80	60.0	1.3	0.3			0	80	60	1.3 0.3
15:26:00	29		50	60.0	0.8	0.2			0	50	60	0.8 0.2
15:28:00	30		125	60.0	2.1	0.5			0	125	60	2.1 0.5
MEAN			116	60.0	1.9	0.4	0	0.0	0.0	116	60	1.9 0.4
S.D.			84	0.0	1.4	0.3	0	0.0	0.0	84	0	1.4 0.3
MIN			25	60.0	0.4	0.1	0	0.0	0.0	25	60	0.4 0.1
MAX			430	60.0	7.2	1.6	0	0.0	0.0	430	60	7.2 1.6

Table 1. cont.

EXPT NO: 91-07 MAY 16, 1991			SIMULATED CONDITION: MEAN LEN: 4.8 cm		HYPOXIA IN THE FRESH WATER ZONE (DISSOLVED OXYGEN REDUCTION 'DO2 RED')									
TIME (H)	FISH NO.	TOP DO2 (MG/L)	BOTTOM TWO ZONES				TOP ZONE				% TIME TOP	TOT DIST (CM)	TOT OBS (S)	OVERALL CM/S BLENS
			CM	S	CM/S BLENS		CM	S	CM/S BLENS					
09:00:10	1	11.1	165	17.8	9.3	2.1	390	42.2	9.2	2.1	70	555	60	9.3 2.1
09:03:00	2	11.1	140	60.0	2.3	0.5					0	140	60	2.3 0.5
09:06:00	3	11.1	20	60.0	0.3	0.1					0	20	60	0.3 0.1
09:08:00	4	11.1	255	60.0	4.3	1.0					0	255	60	4.3 1.0
09:10:00	5	11.2	260	26.7	9.7	2.2	350	33.3	10.5	2.4	56	610	60	10.2 2.3
09:14:00	6	11.2					250	60.0	4.2	0.9	100	250	60	4.2 0.9
09:15:30	7	11.2	120	37.4	3.2	0.7	170	12.6	13.5	3.0	21	290	60	4.8 1.1
09:17:00	8	11.2	210	15.4	13.6	3.1	410	44.6	9.2	2.1	74	620	60	10.3 2.3
09:18:30	9	11.2					530	60.0	8.8	2.0	100	530	60	8.8 2.0
09:20:00	10	11.2	40	2.4	16.7	3.7	510	57.6	8.9	2.0	96	550	60	9.2 2.1
MEAN	11.2		151	35.0	7.4	1.7	373	44.3	9.2	2.1	50	382	60	6.4 1.4
S.D.	0.1		90	23.0	5.8	1.3	130	17.3	2.8	0.6	36	216	0	3.6 0.8
MIN	11.1		20	2.4	0.3	0.1	170	12.6	4.2	0.9	0	20	60	0.3 0.1
MAX	11.2		260	60.0	16.7	3.7	530	60.0	13.5	3.0	100	620	60	10.3 2.3
09:47:30	11	10.0	490	41.1	11.9	2.7	240	18.9	12.7	2.8	32	730	60	12.2 2.7
09:49:30	12	9.9	265	55.2	4.8	1.1	80	4.8	16.7	3.7	8	345	60	5.8 1.3
09:51:30	13	9.8	240	60.0	4.0	0.9					0	240	60	4.0 0.9
09:53:30	14	9.7	230	20.1	11.4	2.6	470	39.9	11.8	2.6	67	700	60	11.7 2.6
09:55:30	15	9.5	330	60.0	5.5	1.2					0	330	60	5.5 1.2
10:01:20	16	9.0	340	35.6	9.6	2.1	190	24.4	7.8	1.7	41	530	60	8.8 2.0
10:03:00	17	8.9	710	60.0	11.8	2.6					0	710	60	11.8 2.6
10:04:30	18	8.7	355	27.7	12.8	2.9	370	32.3	11.5	2.6	54	725	60	12.1 2.7
10:06:30	19	8.6	250	16.9	14.8	3.3	490	43.1	11.4	2.5	72	740	60	12.3 2.8
10:08:30	20	8.5	650	60.0	10.8	2.4					0	650	60	10.8 2.4
MEAN	9.3		386	43.7	9.7	2.2	307	27.2	12.0	2.7	18	570	60	9.5 2.1
S.D.	0.6		173	17.6	3.7	0.8	164	14.3	2.9	0.6	24	194	0	3.2 0.7
MIN	8.5		230	16.9	4.0	0.9	80	4.8	7.8	1.7	0	240	60	4.0 0.9
MAX	10.0		710	60.0	14.8	3.3	490	43.1	16.7	3.7	72	740	60	12.3 2.8
10:22:00	21	7.5	320	23.3	13.7	3.1	330	36.7	9.0	2.0	61	650	60	10.8 2.4
10:24:00	22	7.3	390	22.1	17.6	3.9	360	37.9	9.5	2.1	63	750	60	12.5 2.8
10:26:00	23	7.2	500	58.9	8.5	1.9	5	1.1	4.5	1.0	2	505	60	8.4 1.9
10:28:00	24	7.0	370	28.7	12.9	2.9	295	31.3	9.4	2.1	52	665	60	11.1 2.5
10:30:00	25	6.9	750	60.0	12.5	2.8					0	750	60	12.5 2.8
10:33:00	26	6.8	460	41.9	11.0	2.5	210	18.1	11.6	2.6	30	670	60	11.2 2.5
10:34:40	27	6.7	730	60.0	12.2	2.7					0	730	60	12.2 2.7
10:36:30	28	6.6	690	50.1	13.8	3.1	120	9.9	12.1	2.7	17	810	60	13.5 3.0
10:38:30	29	6.5	670	56.5	11.9	2.7	50	3.5	14.3	3.2	6	720	60	12.0 2.7
10:40:30	30	6.4	750	60.0	12.5	2.8					0	750	60	12.5 2.8

Table 1. cont.

TIME (H)	FISH NO.	TOP DO ₂ (MG/L)	BOTTOM TWO ZONES				TOP ZONE				% TIME TOP	TOT DIST (CM)	TOT OBS (S)	OVERALL CM/S BLENS
			CM	S	CM/S	BLENS	CM	S	CM/S	BLENS				
MEAN	6.9	563	46.2	12.7	2.8		196	19.8	10.1	2.3	15	700	60	11.7 2.6
S.D.	0.4	172	15.9	2.3	0.5		140	15.6	3.1	0.7	22	84	0	1.4 0.3
MIN	6.4	320	22.1	8.5	1.9		5	1.1	4.5	1.0	0	505	60	8.4 1.9
MAX	7.5	750	60.0	17.6	3.9		360	37.9	14.3	3.2	63	810	60	13.5 3.0
10:51:30	31	5.8	570	60.0	9.5	2.1					0	570	60	9.5 2.1
10:52:30	32	5.7	450	32.5	13.8	3.1	390	27.5	14.2	3.2	46	840	60	14.0 3.1
10:55:30	33	5.6	760	55.9	13.6	3.0	60	4.1	14.6	3.3	7	820	60	13.7 3.1
10:57:30	34	5.5	820	60.0	13.7	3.1					0	820	60	13.7 3.1
10:59:30	35	5.4	320	30.3	10.6	2.4	390	29.7	13.1	2.9	50	710	60	11.8 2.6
11:03:00	36	5.3	140	15.8	8.9	2.0	350	44.2	7.9	1.8	74	490	60	8.2 1.8
11:05:00	37	5.2	570	48.7	11.7	2.6	150	11.3	13.3	3.0	19	720	60	12.0 2.7
11:07:00	38	5.1	680	60.0	11.3	2.5					0	680	60	11.3 2.5
11:09:00	39	5.0	520	60.0	8.7	1.9					0	520	60	8.7 1.9
11:11:00	40	4.9	570	44.9	12.7	2.8	195	15.1	12.9	2.9	25	765	60	12.8 2.9
MEAN	5.4	540	46.8	11.4	2.6		256	22.0	12.7	2.8	14	694	60	11.6 2.6
S.D.	0.3	202	15.7	2.0	0.4		140	14.6	2.4	0.5	22	128	0	2.1 0.5
MIN	4.9	140	15.8	8.7	1.9		60	4.1	7.9	1.8	0	490	60	8.2 1.8
MAX	5.8	820	60.0	13.8	3.1		390	44.2	14.6	3.3	74	840	60	14.0 3.1
11:21:00	41	4.6	500	44.7	11.2	2.5	160	15.3	10.5	2.3	26	660	60	11.0 2.5
11:26:00	42	4.5	600	60.0	10.0	2.2					0	600	60	10.0 2.2
11:29:00	43	4.4	530	55.1	9.6	2.2	50	4.9	10.2	2.3	8	580	60	9.7 2.2
11:32:00	44	4.3	680	60.0	11.3	2.5					0	680	60	11.3 2.5
MEAN	4.5	578	55.0	10.5	2.4		105	10.1	10.3	2.3	4	630	60	10.5 2.3
S.D.	0.1	80	7.2	0.9	0.2		78	7.4	0.2	0.0	15	48	0	0.8 0.2
MIN	4.3	500	44.7	9.6	2.2		50	4.9	10.2	2.3	0	580	60	9.7 2.2
MAX	4.6	680	60.0	11.3	2.5		160	15.3	10.5	2.3	26	680	60	11.3 2.5
11:50:15	45	3.7	720	60.0	12.0	2.7					0	720	60	12.0 2.7
11:51:40	46	3.7	350	37.1	9.4	2.1	250	22.9	10.9	2.4	38	600	60	10.0 2.2
11:54:45	47	3.6	690	60.0	11.5	2.6					0	690	60	11.5 2.6
11:56:15	48	3.6	550	60.0	9.2	2.1					0	550	60	9.2 2.1
11:59:15	49	3.6	610	58.8	10.4	2.3	50	1.2	41.7	9.3	2	660	60	11.0 2.5
11:58:15	50	3.5	630	60.0	10.5	2.3					0	630	60	10.5 2.3
11:59:40	51	3.5	630	59.8	10.5	2.4	1	0.2	5.0	1.1	0	631	60	10.5 2.4
12:01:15	52	3.5	350	30.0	11.7	2.6					0	350	30	11.7 2.6
12:02:30	53	3.5	300	30.0	10.0	2.2					0	300	30	10.0 2.2
12:03:30	54	3.5	300	30.0	10.0	2.2					0	300	30	10.0 2.2
MEAN	3.6	513	48.6	10.5	2.4		100	8.1	19.2	4.3	1	543	51	10.6 2.4
S.D.	0.1	169	14.6	0.9	0.2		132	12.8	19.7	4.4	12	163	14	0.9 0.2
MIN	3.5	300	30.0	9.2	2.1		1	0.2	5.0	1.1	0	300	30	9.2 2.1
MAX	3.7	720	60.0	12.0	2.7		250	22.9	41.7	9.3	38	720	60	12.0 2.7

Table 1. cont.

TIME (H)	FISH NO.	TOP DO2 (MG/L)	BOTTOM TWO ZONES				TOP ZONE				% TIME TOP	TOT DIST (CM)	TOT OBS (S)	OVERALL	
			CM	S	CM/S	BLENS	CM	S	CM/S	BLENS				CM/S	BLENS
12:0535	55	3.4	750	30.0	25.0	5.6					0	750	30	25.0	5.6
12:0630	56	3.4	180	30.0	6.0	1.3					0	180	30	6.0	1.3
12:0730	57	3.4	350	30.0	11.7	2.6					0	350	30	11.7	2.6
12:0830	58	3.3	510	38.0	13.4	3.0	30	2.0	15.0	3.4	5	540	40	13.5	3.0
12:1000	59	3.3	450	60.0	7.5	1.7					0	450	60	7.5	1.7
12:1215	60	3.3	610	49.3	12.4	2.8	175	10.7	16.4	3.7	18	785	60	13.1	2.9
12:1345	61	3.3	350	30.0	11.7	2.6					0	350	30	11.7	2.6
12:1500	62	3.2	620	60.0	10.3	2.3					0	620	60	10.3	2.3
12:1700	63	3.2	810	60.0	13.5	3.0					0	810	60	13.5	3.0
12:2000	64	3.1	670	51.0	13.1	2.9	150	9.0	16.7	3.7	15	820	60	13.7	3.1
MEAN		3.3	530	43.8	12.5	2.8	118	7.2	16.0	3.6	1	566	46	12.6	2.8
S.D.		0.1	199	13.6	5.1	1.1	78	4.6	0.9	0.2	10	227	15	5.1	1.1
MIN		3.1	180	30.0	6.0	1.3	30	2.0	15.0	3.4	0	180	30	6.0	1.3
MAX		3.4	810	60.0	25.0	5.6	175	10.7	16.7	3.7	18	820	60	25.0	5.6
12:4600	65	3.5	640	59.3	10.8	2.4	15	0.7	21.4	4.8	1	655	60	10.9	2.4
13:0130	66	4.6	720	60.0	12.0	2.7					0	720	60	12.0	2.7
13:0330	67	4.8	600	52.0	11.5	2.6	120	8.0	15.0	3.4	13	720	60	12.0	2.7
13:0530	68	4.9	20	3.0	6.7	1.5	540	57.0	9.5	2.1	95	560	60	9.3	2.1
13:0800	69	5.0	350	60.0	5.8	1.3					0	350	60	5.8	1.3
13:1700	70	5.6	30	2.6	11.5	2.6	450	57.4	7.8	1.8	96	480	60	8.0	1.8
13:1900	71	5.7	530	60.0	8.8	2.0					0	530	60	8.8	2.0
13:2100	72	5.9	520	42.0	12.4	2.8	200	18.0	11.1	2.5	30	720	60	12.0	2.7
13:2330	73	6.0	550	60.0	9.2	2.1					0	550	60	9.2	2.1
13:2530	74	6.1	280	22.3	12.6	2.8	400	37.7	10.6	2.4	63	680	60	11.3	2.5
MEAN		5.2	424	42.1	10.1	2.3	288	29.8	12.6	2.8	20	597	60	9.9	2.2
S.D.		0.8	246	23.9	2.4	0.5	206	24.6	4.9	1.1	32	124	0	2.1	0.5
MIN		3.5	20	2.6	5.8	1.3	15	0.7	7.8	1.8	0	350	60	5.8	1.3
MAX		6.1	720	60.0	12.6	2.8	540	57.4	21.4	4.8	96	720	60	12.0	2.7
13:3500	75	6.5	590	60.0	9.8	2.2					0	590	60	9.8	2.2
13:3630	76	6.7	710	58.5	12.1	2.7	110	60.0	1.8	0.4	100	110	60	1.8	0.4
13:3835	77	6.7	710	58.5	12.1	2.7	10	1.5	6.7	1.5	3	720	60	12.0	2.7
13:4100	78	6.8					165	60.0	2.8	0.6	100	165	60	2.8	0.6
13:4800	79	7.1	450	42.5	10.6	2.4	180	17.5	10.3	2.3	29	630	60	10.5	2.3
13:5100	80	7.2					290	60.0	4.8	1.1	100	290	60	4.8	1.1
13:5400	81	7.3	270	17.4	15.5	3.5	480	42.6	11.3	2.5	71	750	60	12.5	2.8
13:5540	82	7.4	260	20.2	12.9	2.9	420	39.8	10.6	2.4	68	680	60	11.3	2.5
13:5750	83	7.5	700	60.0	11.7	2.6					0	700	60	11.7	2.6
14:0000	84	7.5	600	49.5	12.1	2.7	110	10.5	10.5	2.3	18	710	60	11.8	2.6
MEAN		7.1	511	44.0	12.1	2.7	221	36.5	7.3	1.6	50	535	60	8.9	2.0
S.D.		0.4	189	18.4	1.8	0.4	163	23.8	3.8	0.9	37	247	0	4.1	0.9
MIN		6.5	260	17.4	9.8	2.2	10	1.5	1.8	0.4	0	110	60	1.8	0.4
MAX		7.5	710	60.0	15.5	3.5	480	60.0	11.3	2.5	100	750	60	12.5	2.8

Table 1. cont.

TIME (H)	FISH NO.	TOP DO2 (MG/L)	BOTTOM TWO ZONES				TOP ZONE				% TIME TOP	TOT DIST (CM)	TOT OBS (S)	OVERALL CM/S BLENS
			CM	S	CM/S	BLENS	CM	S	CM/S	BLENS				
14:11:30	85	8.0	510	60.0	8.5	1.9					0	510	60	8.5 1.9
14:13:00	86	8.1	15	60.0	0.3	0.1					0	15	60	0.3 0.1
14:16:00	87	8.2	800	58.7	13.6	3.0	10	1.3	7.7	1.7	2	810	60	13.5 3.0
14:19:00	88	8.2	350	37.0	9.5	2.1	150	23.0	6.5	1.5	38	500	60	8.3 1.9
14:21:00	89	8.3			130	60.0	2.2	0.5			100	130	60	2.2 0.5
14:25:00	90	8.3			110	60.0	1.8	0.4			100	110	60	1.8 0.4
14:27:30	91	8.4	740	60.0	12.3	2.8					0	740	60	12.3 2.8
14:29:30	92	8.4			270	60.0	4.5	1.0			100	270	60	4.5 1.0
14:31:30	93	8.5	400	60.0	6.7	1.5	20	0.4	50.0	11.2	0	400	60	6.7 1.5
14:34:00	94	8.6	520	59.6	8.7	2.0					1	540	60	9.0 2.0
MEAN		8.3	476	56.5	8.5	1.9	115	34.1	12.1	2.7	28	403	60	6.7 1.5
S.D.		0.2	262	8.6	4.3	1.0	95	29.5	18.7	4.2	42	268	0	4.5 1.0
MIN		8.0	15	37.0	0.3	0.1	10	0.4	1.8	0.4	0	15	60	0.3 0.1
MAX		8.6	800	60.0	13.6	3.0	270	60.0	50.0	11.2	100	810	60	13.5 3.0
14:55:00	95	9.1			260	60.0	4.3	1.0			100	260	60	4.3 1.0
14:57:00	96	9.2	190	60.0	3.2	0.7					0	190	60	3.2 0.7
15:03:00	97	9.3	110	60.0	1.8	0.4					0	110	60	1.8 0.4
15:05:00	98	9.3	110	60.0	1.8	0.4					0	110	60	1.8 0.4
15:07:30	99	9.3	140	60.0	2.3	0.5					0	140	60	2.3 0.5
15:14:30	100	9.4			120	60.0	2.0	0.4			100	120	60	2.0 0.4
15:16:30	101	9.4	185	60.0	3.1	0.7					0	185	60	3.1 0.7
15:18:40	102	9.4	145	60.0	2.4	0.5					0	145	60	2.4 0.5
15:21:00	103	9.5	80	60.0	1.3	0.3					0	80	60	1.3 0.3
15:23:30	104	9.5	110	60.0	1.8	0.4					0	110	60	1.8 0.4
MEAN		9.3	134	60.0	2.2	0.5	190	60.0	3.2	0.7	10	145	60	2.4 0.5
S.D.		0.1	39	0.0	0.6	0.1	99	0.0	1.6	0.4	38	53	0	0.9 0.2
MIN		9.1	80	60.0	1.3	0.3	120	60.0	2.0	0.4	0	80	60	1.3 0.3
MAX		9.5	190	60.0	3.2	0.7	260	60.0	4.3	1.0	100	260	60	4.3 1.0

Table 2. Distribution of juvenile chinook salmon in the WCS during 1985 and 1991. Analyses produced by the 'SNAP' software program, under the same simulated conditions presented in Table 1. Refer to text for explanation of headings.

EXPT	DATE	START	N	SIMCOND	XMEAN	YMEAN	XMED	YMED	THETA	XELP	YELP
85-03	850423	15:00	19	FW ST	0.38	-0.01	0.46	0.03	77.46	0.35	0.23
85-03	850423	15:05	20	FW ST	0.20	-0.14	0.20	-0.26	28.26	0.26	0.45
85-03	850423	15:10	19	FW ST	0.24	-0.19	0.27	-0.15	4.37	0.24	0.60
85-03	850423	15:15	19	FW ST	0.42	-0.16	0.55	0.07	15.77	0.23	0.55
85-03	850423	15:20	20	FW ST	0.46	0.04	0.63	0.24	33.49	0.29	0.58
85-03	850423	15:25	19	FW ST	0.45	-0.07	0.62	-0.03	55.96	0.44	0.35
85-03	850423	15:30	20	FW ST	0.39	0.02	0.49	0.04	54.60	0.41	0.26
85-03	850424	08:00	20	SW ADD	0.26	-0.06	0.25	-0.02	33.64	0.24	0.44
85-03	850424	08:05	20	SW ADD	-0.08	-0.58	-0.04	-0.66	41.54	0.29	0.56
85-03	850424	08:10	20	SW ADD	0.06	-0.59	0.12	-0.43	39.71	0.24	0.58
85-03	850424	08:15	19	SW ADD	0.04	-0.16	0.07	-0.25	44.70	0.24	0.53
85-03	850424	08:20	19	SW ADD	-0.04	-0.36	-0.01	-0.28	89.05	0.59	0.39
85-03	850424	08:25	19	SW ADD	0.09	-0.31	0.19	-0.36	35.08	0.43	0.50
85-03	850424	08:30	20	SW ADD	0.08	-0.13	0.25	-0.14	80.86	0.30	0.48
85-03	850424	08:31	20	SW ADD	-0.06	-0.36	0.02	-0.22	45.59	0.35	0.49
85-03	850424	08:32	19	SW ADD	0.21	-0.56	0.36	-0.55	55.90	0.31	0.58
85-03	850424	08:33	18	SW ADD	-0.27	-1.12	-0.41	-1.14	81.38	0.09	0.36
85-03	850424	08:34	18	SW ADD	-0.25	-1.13	-0.40	-1.14	79.33	0.09	0.32
85-03	850424	08:35	19	SW ADD	-0.22	-1.03	-0.31	-1.05	75.88	0.07	0.31
85-03	850424	08:36	20	SW ADD	0.06	-0.55	0.28	-0.51	17.30	0.54	0.17
85-03	850424	08:37	20	SW ADD	-0.33	-0.87	-0.41	-0.95	32.73	0.28	0.16
85-03	850424	08:38	19	SW ADD	0.01	-0.83	0.07	-0.78	75.75	0.11	0.49
85-03	850424	08:39	18	SW ADD	-0.44	-0.81	-0.43	-0.77	54.89	0.19	0.12
85-03	850424	08:40	19	SW ADD	-0.22	-0.76	-0.19	-0.70	34.66	0.27	0.16
85-03	850424	08:45	18	SW ADD	-0.08	-0.90	-0.09	-0.89	70.97	0.18	0.37
85-03	850424	09:00	19	SW ADD	-0.08	-0.68	-0.20	-0.68	51.51	0.11	0.50
85-03	850424	09:15	18	SW ADD	-0.05	-0.34	-0.05	-0.09	37.42	0.24	0.55
85-03	850424	09:30	20	SW ADD	0.35	-0.26	0.47	-0.16	44.86	0.26	0.35
85-03	850424	09:45	17	SW ADD	0.09	-0.27	0.13	-0.16	10.48	0.20	0.31
85-03	850424	10:00	18	SW ADD	-0.01	-0.60	-0.01	-0.55	36.69	0.39	0.51
85-03	850424	10:15	20	SW ADD	-0.34	-0.55	-0.37	-0.64	4.45	0.19	0.38
85-03	850424	10:30	19	SW ADD	0.06	-0.13	0.09	0.03	31.28	0.15	0.43
85-03	850424	15:00	18	SW ST	-0.18	-0.11	-0.26	0.05	18.01	0.36	0.51
85-03	850424	15:05	18	SW ST	-0.19	-0.07	-0.26	0.15	22.39	0.29	0.60
85-03	850424	15:10	18	SW ST	-0.14	0.00	-0.17	0.10	15.51	0.25	0.45
85-03	850424	15:15	19	SW ST	-0.20	0.03	-0.22	0.15	79.68	0.43	0.22
85-03	850424	15:20	19	SW ST	-0.16	-0.13	-0.19	0.02	80.20	0.46	0.30
85-03	850424	15:25	19	SW ST	0.14	-0.05	0.22	0.11	27.40	0.20	0.55
85-03	850424	15:30	20	SW ST	-0.27	-0.15	0.31	0.04	10.55	0.25	0.49
85-03	850425	08:30	18	D02 RED	0.06	-0.14	0.07	0.20	12.22	0.41	0.63
85-03	850425	08:45	17	D02 RED	-0.06	0.00	-0.04	0.15	15.48	0.34	0.53
85-03	850425	09:00	20	D02 RED	-0.06	0.08	-0.09	0.16	80.55	0.42	0.32
85-03	850425	09:15	18	D02 RED	0.18	0.12	0.27	0.23	63.33	0.40	0.47
85-03	850425	09:30	18	D02 RED	-0.22	-0.05	-0.22	0.04	81.31	0.48	0.24

EXPT	DATE	START	N	SIMCOND	XMEAN	YMEAN	XMED	YMED	THETA	XELP	YELP
85-03	850425	09:45	17	D02 RED	0.11	-0.01	0.11	0.22	26.18	0.31	0.56
85-03	850425	10:00	20	D02 RED	-0.16	0.02	-0.27	0.08	9.41	0.33	0.48
85-03	850425	10:15	20	D02 RED	-0.24	-0.20	-0.26	0.01	12.35	0.27	0.53
85-03	850425	10:30	20	D02 RED	-0.03	-0.09	0.04	-0.03	61.38	0.53	0.33
85-03	850425	10:45	18	D02 RED	-0.19	-0.09	-0.24	0.01	11.77	0.34	0.52
85-03	850425	11:00	20	D02 RED	-0.14	-0.18	-0.13	0.01	76.19	0.46	0.33
85-03	850425	11:15	18	D02 RED	0.14	-0.11	0.12	0.01	51.95	0.24	0.42
85-03	850425	11:30	20	D02 RED	-0.18	-0.20	-0.26	0.01	0.51	0.22	0.42
85-03	850425	11:45	18	D02 RED	-0.14	-0.14	-0.29	0.01	49.70	0.30	0.43
85-03	850425	12:00	17	D02 RED	-0.10	-0.21	-0.21	0.01	2.40	0.29	0.41
85-03	850425	12:15	18	D02 RED	0.02	-0.15	0.04	0.00	41.65	0.33	0.39
85-03	850425	12:30	17	D02 RED	0.14	-0.19	0.09	0.01	62.40	0.47	0.31
85-03	850425	12:45	20	D02 RED	-0.05	-0.53	-0.12	-0.57	26.85	0.23	0.62
85-03	850425	13:00	15	D02 RED	0.05	-0.31	0.06	-0.05	36.75	0.26	0.52
85-03	850425	13:15	16	D02 RED	-0.22	-0.31	-0.35	-0.02	14.17	0.39	0.44
85-03	850425	13:30	19	D02 RED	-0.12	-0.33	-0.26	-0.03	21.89	0.32	0.50
85-03	850425	13:45	17	D02 RED	-0.11	-0.27	-0.24	-0.05	35.58	0.29	0.48
85-03	850425	14:00	20	D02 RED	-0.01	-0.42	-0.17	-0.37	69.56	0.53	0.34
85-03	850425	14:15	17	D02 RED	-0.23	-0.29	-0.30	-0.18	0.24	0.39	0.51
85-03	850425	14:30	18	D02 RED	-0.14	-0.37	-0.28	-0.21	18.35	0.46	0.51
85-03	850425	14:45	17	D02 RED	-0.22	-0.27	-0.35	-0.05	3.00	0.42	0.49
85-03	850425	15:00	20	D02 RED	-0.15	-0.26	-0.35	0.03	33.26	0.35	0.72
85-07	850522	15:00	19	FW ST	0.25	0.06	0.31	0.12	63.11	0.23	0.49
85-07	850522	15:05	18	FW ST	0.31	-0.05	0.60	0.02	78.48	0.30	0.53
85-07	850522	15:10	18	FW ST	0.31	0.09	0.51	0.25	45.74	0.25	0.55
85-07	850522	15:15	20	FW ST	0.28	0.10	0.47	0.29	88.35	0.42	0.47
85-07	850522	15:20	19	FW ST	0.12	0.00	0.33	-0.07	3.95	0.49	0.30
85-07	850522	15:25	19	FW ST	-0.05	0.05	-0.06	0.05	52.28	0.27	0.54
85-07	850522	15:30	20	FW ST	0.41	0.01	0.63	0.08	62.91	0.35	0.47
85-07	850523	08:00	18	SW ADD	0.34	-0.06	0.47	0.19	35.31	0.30	0.60
85-07	850523	08:05	20	SW ADD	0.31	0.03	0.43	0.26	38.33	0.29	0.46
85-07	850523	08:10	20	SW ADD	0.45	0.30	0.54	0.28	74.14	0.17	0.29
85-07	850523	08:15	19	SW ADD	0.45	0.26	0.52	0.26	7.04	0.29	0.20
85-07	850523	08:20	19	SW ADD	0.34	0.09	0.38	0.15	35.38	0.19	0.34
85-07	850523	08:25	20	SW ADD	0.55	0.32	0.63	0.36	85.06	0.17	0.21
85-07	850523	08:30	19	SW ADD	0.30	0.05	0.38	0.09	72.40	0.20	0.43
85-07	850523	08:31	18	SW ADD	0.23	-0.12	0.17	0.01	27.95	0.24	0.55
85-07	850523	08:32	20	SW ADD	0.23	-0.22	0.26	-0.04	88.04	0.44	0.22
85-07	850523	08:33	18	SW ADD	0.09	-0.38	0.08	-0.34	47.66	0.15	0.11
85-07	850523	08:34	20	SW ADD	0.49	-0.15	0.52	-0.09	20.46	0.06	0.36
85-07	850523	08:35	20	SW ADD	0.58	-0.25	0.58	-0.21	83.31	0.31	0.10
85-07	850523	08:36	19	SW ADD	0.17	-0.27	0.25	-0.28	3.70	0.24	0.07
85-07	850523	08:37	19	SW ADD	-0.02	-0.32	-0.04	-0.32	25.86	0.19	0.28
85-07	850523	08:38	20	SW ADD	-0.04	-0.14	-0.08	-0.11	29.19	0.14	0.30
85-07	850523	08:39	20	SW ADD	-0.09	-0.21	0.02	-0.19	26.47	0.37	0.22
85-07	850523	08:40	20	SW ADD	-0.37	-0.33	-0.40	-0.28	48.67	0.20	0.05
85-07	850523	08:45	19	SW ADD	-0.09	-0.42	-0.29	-0.32	7.75	0.40	0.25
85-07	850523	09:00	18	SW ADD	0.03	-0.26	0.05	-0.22	23.01	0.21	0.19
85-07	850523	09:15	20	SW ADD	-0.22	-0.30	-0.23	-0.27	75.10	0.12	0.17
85-07	850523	09:30	20	SW ADD	-0.19	-0.06	-0.12	-0.11	73.86	0.13	0.26

Table 2. cont.

EXPT	DATE	START	N	SIMCOND	XMEAN	YMEAN	XMED	YMED	THETA	XELP	YELP
85-07	850523	09:45	20	SW ADD	0.32	-0.26	0.49	-0.21	55.27	0.21	0.46
85-07	850523	10:00	20	SW ADD	0.46	-0.01	0.53	0.12	32.51	0.08	0.38
85-07	850523	10:15	19	SW ADD	0.27	-0.02	0.30	0.06	35.15	0.20	0.35
85-07	850523	10:30	20	SW ADD	0.37	0.02	0.37	0.03	68.68	0.06	0.18
85-07	850523	15:00	20	SW ST	0.18	-0.17	0.21	-0.02	34.23	0.18	0.40
85-07	850523	15:05	20	SW ST	0.31	0.07	0.38	0.13	35.62	0.19	0.48
85-07	850523	15:10	18	SW ST	0.28	-0.17	0.34	0.00	34.65	0.18	0.49
85-07	850523	15:15	18	SW ST	0.27	-0.10	0.44	0.01	40.55	0.13	0.52
85-07	850523	15:20	19	SW ST	0.29	-0.11	0.36	0.04	11.75	0.25	0.50
85-07	850523	15:25	19	SW ST	0.23	-0.09	0.32	0.02	32.36	0.18	0.43
85-07	850523	15:30	19	SW ST	0.24	0.01	0.21	0.08	36.97	0.16	0.36
85-07	850524	07:00	20	D02 RED	0.27	-0.09	0.34	0.06	27.11	0.23	0.51
85-07	850524	07:15	18	D02 RED	0.15	-0.13	0.28	0.11	22.79	0.36	0.63
85-07	850524	07:30	20	D02 RED	0.35	-0.10	0.42	0.07	22.47	0.19	0.54
85-07	850524	07:45	18	D02 RED	0.39	-0.03	0.42	0.18	8.68	0.18	0.54
85-07	850524	08:00	19	D02 RED	0.28	-0.05	0.34	0.05	30.72	0.19	0.48
85-07	850524	08:15	16	D02 RED	0.36	-0.02	0.42	0.02	7.86	0.20	0.32
85-07	850524	08:30	19	D02 RED	0.22	-0.28	0.24	-0.14	27.15	0.24	0.44
85-07	850524	08:45	17	D02 RED	0.20	-0.10	0.26	0.02	1.50	0.20	0.39
85-07	850524	09:00	19	D02 RED	0.18	-0.09	0.22	0.03	17.44	0.22	0.41
85-07	850524	09:15	19	D02 RED	0.28	-0.24	0.39	-0.09	2.34	0.39	0.44
85-07	850524	09:30	19	D02 RED	0.21	-0.07	-0.20	-0.10	76.56	0.11	0.27
85-07	850524	09:45	20	D02 RED	0.31	-0.26	0.48	-0.21	55.21	0.20	0.46
85-07	850524	10:00	19	D02 RED	0.48	0.05	0.54	0.14	34.41	0.08	0.30
85-07	850524	10:15	17	D02 RED	0.24	-0.06	0.29	0.06	41.10	0.21	0.37
85-07	850524	10:30	19	D02 RED	0.33	-0.01	0.34	-0.01	69.80	0.06	0.19
85-07	850524	10:45	19	D02 RED	0.12	-0.30	0.19	-0.24	43.51	0.15	0.49
85-07	850524	11:00	21	D02 RED	-0.05	-0.20	-0.12	-0.17	46.62	0.13	0.18
85-07	850524	11:15	19	D02 RED	0.05	-0.17	0.14	0.01	36.60	0.23	0.44
85-07	850524	11:30	16	D02 RED	0.06	-0.29	0.09	-0.18	53.61	0.39	0.52
85-07	850524	11:45	17	D02 RED	0.29	-0.22	0.42	-0.04	40.39	0.18	0.49
85-07	850524	12:00	18	D02 RED	0.20	-0.46	0.24	-0.56	22.47	0.15	0.21
85-07	850524	12:15	15	D02 RED	0.07	-0.36	0.05	-0.32	71.46	0.58	0.34
85-07	850524	12:30	16	D02 RED	0.27	-0.09	0.39	0.02	64.62	0.55	0.42
85-07	850524	12:45	17	D02 RED	0.32	-0.20	0.33	-0.06	13.72	0.35	0.62
85-07	850524	13:00	15	D02 RED	0.37	-0.19	0.38	0.02	20.04	0.30	0.59
85-07	850524	13:15	19	D02 RED	0.15	-0.30	0.19	-0.22	14.22	0.36	0.46
85-07	850524	13:30	19	D02 RED	0.09	-0.56	0.18	-0.55	1.62	0.33	0.55
85-10	850611	15:00	20	FW ST	0.13	0.01	0.22	-0.04	63.59	0.27	0.36
85-10	850611	15:05	19	FW ST	0.22	-0.14	0.31	-0.03	67.20	0.46	0.23
85-10	850611	15:10	19	FW ST	0.20	0.04	0.33	-0.05	7.49	0.36	0.20
85-10	850611	15:15	20	FW ST	0.12	-0.33	0.17	-0.27	47.02	0.23	0.32
85-10	850611	15:20	20	FW ST	0.19	0.04	0.28	0.04	70.54	0.17	0.29
85-10	850611	15:25	20	FW ST	0.04	-0.05	0.11	-0.09	12.71	0.39	0.31
85-10	850611	15:30	20	FW ST	0.11	0.03	0.19	-0.01	57.82	0.23	0.31
85-10	850612	08:00	20	SW ADD	0.19	0.04	0.27	0.04	68.30	0.30	0.31
85-10	850612	08:05	19	SW ADD	0.21	-0.25	0.25	-0.20	10.36	0.28	0.23
85-10	850612	08:10	18	SW ADD	0.13	-0.06	0.29	-0.08	0.96	0.37	0.23
85-10	850612	08:15	20	SW ADD	0.21	-0.04	0.28	-0.01	4.77	0.33	0.19
85-10	850612	08:20	19	SW ADD	0.18	0.01	0.16	0.04	82.80	0.16	0.31

Table 2. cont.

EXPT	DATE	START	N	SIMCOND	XMEAN	YMEAN	XMED	YMED	THETA	XELP	YELP
85-10	850612	08:25	19	SW ADD	0.12	0.01	0.19	0.09	35.61	0.21	0.36
85-10	850612	08:30	19	SW ADD	0.21	-0.11	0.25	-0.19	63.60	0.22	0.27
85-10	850612	08:31	20	SW ADD	0.11	-0.25	0.14	-0.21	41.00	0.20	0.39
85-10	850612	08:32	20	SW ADD	-0.11	-0.55	-0.20	-0.53	85.09	0.15	0.31
85-10	850612	08:33	18	SW ADD	0.01	-0.57	-0.05	-0.55	26.44	0.25	0.10
85-10	850612	08:34	20	SW ADD	0.16	-0.57	0.24	-0.53	56.13	0.24	0.37
85-10	850612	08:35	20	SW ADD	0.09	-0.44	0.16	-0.36	41.28	0.18	0.32
85-10	850612	08:36	20	SW ADD	0.01	-0.50	-0.02	-0.41	59.00	0.32	0.15
85-10	850612	08:37	20	SW ADD	-0.04	-0.35	-0.15	-0.28	36.23	0.26	0.35
85-10	850612	08:38	20	SW ADD	0.03	-0.41	0.11	-0.32	46.30	0.25	0.40
85-10	850612	08:39	19	SW ADD	0.20	-0.40	0.26	-0.38	71.89	0.27	0.37
85-10	850612	08:40	20	SW ADD	0.00	-0.55	-0.05	-0.59	29.76	0.31	0.36
85-10	850612	08:45	19	SW ADD	-0.38	-0.26	-0.39	-0.15	85.40	0.37	0.14
85-10	850612	09:00	19	SW ADD	-0.01	-0.37	0.06	-0.38	84.74	0.21	0.32
85-10	850612	09:15	20	SW ADD	0.10	-0.21	0.08	0.20	87.65	0.12	0.22
85-10	850612	09:30	19	SW ADD	0.14	-0.05	0.15	-0.03	19.52	0.31	0.12
85-10	850612	09:45	20	SW ADD	0.31	-0.15	0.41	-0.05	43.95	0.18	0.36
85-10	850612	10:00	20	SW ADD	0.03	-0.25	0.10	-0.28	87.32	0.16	0.29
85-10	850612	10:15	20	SW ADD	0.06	-0.17	0.14	-0.24	86.24	0.20	0.36
85-10	850612	10:30	20	SW ADD	0.27	-0.16	0.28	-0.10	28.16	0.17	0.35
85-10	850612	15:00	20	SW ST	-0.06	-0.11	-0.05	-0.06	1.03	0.29	0.26
85-10	850612	15:05	20	SW ST	0.17	-0.11	0.15	-0.06	59.23	0.19	0.30
85-10	850612	15:10	20	SW ST	0.25	0.04	0.34	0.02	63.87	0.20	0.32
85-10	850612	15:15	20	SW ST	0.22	-0.08	0.33	-0.03	77.96	0.20	0.29
85-10	850612	15:20	20	SW ST	0.16	-0.10	0.22	-0.09	36.63	0.30	0.21
85-10	850612	15:25	20	SW ST	0.17	-0.19	0.17	-0.10	56.00	0.22	0.34
85-10	850612	15:30	19	SW ST	0.10	-0.04	0.19	0.00	74.15	0.18	0.32
85-10	850613	07:00	19	D02 RED	-0.05	-0.32	-0.08	-0.18	11.46	0.36	0.51
85-10	850613	07:15	20	D02 RED	0.18	-0.32	0.29	-0.18	33.67	0.22	0.52
85-10	850613	07:30	16	D02 RED	0.33	-0.20	0.34	0.02	1.62	0.22	0.48
85-10	850613	07:45	17	D02 RED	0.13	-0.19	0.22	-0.04	13.42	0.36	0.43
85-10	850613	08:00	17	D02 RED	0.16	-0.11	0.20	-0.09	41.92	0.24	0.39
85-10	850613	08:15	20	D02 RED	-0.01	-0.25	-0.01	-0.22	43.71	0.43	0.32
85-10	850613	08:30	19	D02 RED	-0.02	-0.44	-0.08	-0.40	5.26	0.39	0.30
85-10	850613	08:45	19	D02 RED	-0.08	-0.26	-0.11	-0.25	1.70	0.32	0.26
85-10	850613	09:00	18	D02 RED	0.09	-0.28	0.13	-0.13	37.95	0.19	0.40
85-10	850613	09:15	19	D02 RED	0.37	-0.32	0.44	-0.21	4.13	0.21	0.37
85-10	850613	09:30	19	D02 RED	0.11	-0.35	0.10	-0.28	38.64	0.25	0.34
85-10	850613	09:45	20	D02 RED	0.18	-0.26	0.12	-0.26	21.56	0.18	0.26
85-10	850613	10:00	18	D02 RED	-0.05	-0.27	-0.05	-0.15	71.09	0.36	0.25
85-10	850613	10:15	19	D02 RED	0.04	-0.47	0.01	-0.44	28.84	0.30	0.31
85-10	850613	10:30	18	D02 RED	0.03	-0.30	0.13	-0.23	59.19	0.24	0.34
85-10	850613	10:45	19	D02 RED	-0.12	-0.39	-0.25	-0.31	47.99	0.29	0.40
85-10	850613	11:00	18	D02 RED	0.23	-0.23	0.25	-0.10	88.10	0.34	0.26
85-10	850613	11:15	19	D02 RED	0.04	-0.21	0.08	-0.08	67.13	0.39	0.23
85-10	850613	11:30	19	D02 RED	0.27	-0.25	0.32	-0.07	13.16	0.30	0.39
85-10	850613	11:45	19	D02 RED	0.20	-0.10	0.19	-0.04	53.87	0.21	0.36
85-10	850613	12:00	18	D02 RED	0.35	0.11	0.35	0.10	24.37	0.17	0.24
85-10	850613	12:15	20	D02 RED	0.13	-0.14	0.20	-0.12	70.86	0.40	0.25
85-10	850613	12:30	20	D02 RED	0.18	-0.16	0.21	-0.05	37.04	0.27	0.48
85-10	850613	12:45	18	D02 RED	0.30	-0.01	0.33	0.06	19.84	0.23	0.40

Table 2. cont.

EXPT	DATE	START	N	SIMCOND	XMEAN	YMEAN	XMED	YMED	THETA	XELP	YELP
85-10	850613	13:00	18	D02 RED	0.16	-0.08	0.15	-0.01	19.48	0.23	0.42
85-10	850613	13:15	20	D02 RED	0.09	-0.15	0.18	-0.11	59.30	0.27	0.35
85-10	850613	13:30	20	D02 RED	0.07	-0.11	0.08	-0.12	60.29	0.21	0.38
91-01	910312	15:00	19	FW ST	-0.57	-0.55	-0.61	-0.77	84.27	0.60	0.11
91-01	910312	15:05	19	FW ST	-0.41	-0.52	-0.63	-0.74	68.19	0.65	0.43
91-01	910312	15:10	19	FW ST	-0.45	-0.35	-0.66	-0.35	76.58	0.66	0.49
91-01	910312	15:15	19	FW ST	-0.48	-0.27	-0.63	-0.34	80.08	0.57	0.39
91-01	910312	15:20	18	FW ST	-0.37	-0.18	-0.62	0.04	20.49	0.43	0.61
91-01	910312	15:25	19	FW ST	-0.62	-0.26	-0.67	-0.09	5.53	0.19	0.59
91-01	910312	15:30	20	FW ST	-0.50	-0.12	-0.69	0.05	15.63	0.38	0.63
91-01	910313	08:00	20	SW ADD	-0.50	-0.42	-0.61	-0.66	12.74	0.34	0.66
91-01	910313	08:05	20	SW ADD	0.38	-0.21	-0.63	-0.04	36.36	0.44	0.61
91-01	910313	08:10	20	SW ADD	-0.46	-0.08	-0.61	0.07	2.75	0.40	0.57
91-01	910313	08:15	19	SW ADD	-0.51	-0.03	-0.65	0.13	21.15	0.31	0.55
91-01	910313	08:20	19	SW ADD	-0.41	-0.21	-0.57	-0.08	29.09	0.42	0.60
91-01	910313	08:25	19	SW ADD	-0.43	-0.17	-0.66	-0.08	61.75	0.60	0.48
91-01	910313	08:30	20	SW ADD	-0.58	-0.26	-0.70	-0.14	82.39	0.63	0.37
91-01	910313	08:31	19	SW ADD	-0.35	-0.16	-0.63	0.01	15.86	0.59	0.53
91-01	910313	08:32	20	SW ADD	-0.46	-0.28	-0.69	-0.13	60.50	0.50	0.53
91-01	910313	08:33	19	SW ADD	-0.52	-0.27	-0.71	-0.06	19.97	0.48	0.57
91-01	910313	08:34	19	SW ADD	-0.56	-0.28	-0.69	-0.14	3.98	0.42	0.57
91-01	910313	08:35	19	SW ADD	-0.56	-0.24	-0.72	-0.02	28.84	0.45	0.54
91-01	910313	08:36	18	SW ADD	-0.47	-0.18	-0.71	0.02	29.51	0.53	0.47
91-01	910313	08:37	19	SW ADD	-0.67	-0.49	-0.68	-0.47	86.17	0.61	0.08
91-01	910313	08:38	20	SW ADD	-0.64	-0.35	-0.70	-0.24	83.24	0.58	0.14
91-01	910313	08:39	19	SW ADD	-0.60	-0.42	-0.71	-0.38	69.91	0.60	0.31
91-01	910313	08:40	19	SW ADD	-0.65	-0.30	-0.71	-0.18	85.34	0.53	0.17
91-01	910313	08:45	18	SW ADD	-0.65	-0.64	-0.69	-0.96	84.41	0.57	0.15
91-01	910313	09:00	20	SW ADD	-0.65	-0.86	-0.71	-0.98	81.14	0.38	0.22
91-01	910313	09:15	19	SW ADD	-0.66	-0.93	-0.69	-1.05	77.22	0.24	0.10
91-01	910313	09:30	18	SW ADD	-0.63	-0.83	-0.68	-1.02	74.11	0.36	0.13
91-01	910313	09:45	17	SW ADD	-0.52	-0.70	-0.69	-0.81	48.48	0.43	0.22
91-01	910313	10:00	17	SW ADD	-0.61	-0.88	-0.70	-1.00	57.18	0.36	0.27
91-01	910313	10:15	19	SW ADD	-0.53	-0.86	-0.63	-1.04	68.67	0.47	0.24
91-01	910313	10:30	18	SW ADD	-0.59	-0.61	-0.72	-0.76	69.02	0.50	0.32
91-01	910313	15:00	19	SW ST	-0.62	-0.28	-0.71	-0.07	76.81	0.63	0.32
91-01	910313	15:05	20	SW ST	-0.52	-0.20	-0.68	-0.02	58.74	0.62	0.33
91-01	910313	15:10	18	SW ST	-0.61	-0.17	-0.71	0.00	71.34	0.64	0.32
91-01	910313	15:15	18	SW ST	-0.58	-0.29	-0.67	-0.11	69.63	0.62	0.29
91-01	910313	15:20	19	SW ST	-0.46	-0.27	-0.64	-0.29	64.24	0.63	0.40
91-01	910313	15:25	19	SW ST	-0.61	-0.23	-0.68	-0.07	82.76	0.67	0.27
91-01	910313	15:30	18	SW ST	-0.53	-0.29	-0.66	-0.21	78.56	0.60	0.37
91-01	910314	09:00	19	D02 RED	-0.63	-0.45	-0.72	-0.63	63.92	0.53	0.30
91-01	910314	09:15	19	D02 RED	-0.55	-0.33	-0.70	-0.11	71.50	0.53	0.41
91-01	910314	09:30	18	D02 RED	-0.39	-0.72	-0.57	-1.05	68.20	0.58	0.38
91-01	910314	09:45	20	D02 RED	-0.47	-0.61	-0.68	-0.75	39.09	0.41	0.53
91-01	910314	10:00	19	D02 RED	-0.48	-0.76	-0.69	-0.95	20.16	0.51	0.44
91-01	910314	10:15	20	D02 RED	-0.56	-0.73	-0.68	-0.96	76.14	0.53	0.30
91-01	910314	10:30	19	D02 RED	-0.69	-0.57	-0.69	-0.81	85.22	0.50	0.07
91-01	910314	10:45	19	D02 RED	-0.20	-0.69	-0.64	-0.89	80.95	0.49	0.68

Table 2. cont.

EXPT	DATE	START	N	SIMCOND	XMEAN	YMEAN	XMED	YMED	THETA	XELP	YELP
91-01	910314	11:00	16	D02 RED	-0.49	-0.76	-0.66	-0.85	32.76	0.40	0.48
91-01	910314	11:15	20	D02 RED	-0.48	-0.60	-0.64	-0.73	5.65	0.39	0.45
91-01	910314	11:30	18	D02 RED	-0.51	-0.67	-0.63	-0.79	2.15	0.28	0.43
91-01	910314	11:45	19	D02 RED	-0.47	-0.45	-0.63	-0.29	82.09	0.48	0.37
91-01	910314	12:00	19	D02 RED	-0.58	-0.47	-0.68	-0.21	89.83	0.44	0.25
91-01	910314	12:15	19	D02 RED	-0.63	-0.65	-0.67	-0.83	81.50	0.42	0.15
91-01	910314	12:30	19	D02 RED	-0.62	-0.60	-0.67	-0.61	89.85	0.36	0.16
91-01	910314	12:45	19	D02 RED	-0.33	-0.70	-0.61	-0.78	85.64	0.37	0.58
91-01	910314	13:00	18	D02 RED	-0.51	-0.65	-0.66	-0.73	49.00	0.45	0.34
91-01	910314	13:15	19	D02 RED	-0.56	-0.61	-0.66	-0.62	6.16	0.26	0.39
91-01	910314	13:30	19	D02 RED	-0.53	-0.61	-0.62	-0.63	70.29	0.42	0.35
91-01	910314	13:45	18	D02 RED	-0.46	-0.55	-0.65	-0.64	23.92	0.50	0.40
91-01	910314	14:00	18	D02 RED	-0.46	-0.48	-0.63	-0.76	0.84	0.37	0.55
91-01	910314	14:15	19	D02 RED	-0.40	-0.55	-0.67	-0.66	12.81	0.56	0.40
91-01	910314	14:30	19	D02 RED	-0.50	-0.42	-0.68	-0.31	63.22	0.40	0.49
91-01	910314	14:45	20	D02 RED	-0.50	-0.54	-0.66	-0.82	0.79	0.39	0.53
91-01	910314	15:00	19	D02 RED	-0.68	-0.34	-0.71	-0.25	89.21	0.46	0.11
91-01	910314	15:15	20	D02 RED	-0.48	-0.44	-0.65	-0.43	25.05	0.41	0.53
91-01	910314	15:30	20	D02 RED	-0.56	-0.27	-0.69	-0.10	15.82	0.33	0.53
91-02	910319	15:00	19	FW ST	-0.22	-0.29	-0.56	-0.17	46.87	0.36	0.72
91-02	910319	15:05	19	FW ST	-0.45	-0.27	-0.62	-0.14	82.12	0.60	0.42
91-02	910319	15:10	20	FW ST	-0.42	-0.34	-0.63	-0.32	59.75	0.52	0.43
91-02	910319	15:15	19	FW ST	-0.44	-0.29	-0.54	-0.30	75.41	0.62	0.29
91-02	910319	15:20	19	FW ST	-0.41	-0.11	-0.51	0.08	84.87	0.53	0.37
91-02	910319	15:25	18	FW ST	-0.40	-0.39	-0.44	-0.67	83.05	0.60	0.33
91-02	910319	15:30	18	FW ST	-0.40	-0.27	-0.63	-0.18	59.55	0.62	0.44
91-02	910320	08:00	20	SW ADD	-0.17	-0.20	-0.16	0.02	70.07	0.59	0.46
91-02	910320	08:05	19	SW ADD	-0.31	-0.37	-0.64	-0.41	53.59	0.43	0.69
91-02	910320	08:10	20	SW ADD	-0.20	-0.12	-0.53	-0.08	9.05	0.59	0.63
91-02	910320	08:15	20	SW ADD	0.03	-0.12	-0.05	-0.21	13.90	0.66	0.48
91-02	910320	08:20	19	SW ADD	0.03	-0.48	0.17	-0.55	58.95	0.54	0.65
91-02	910320	08:25	19	SW ADD	0.09	-0.50	0.32	-0.76	77.07	0.54	0.66
91-02	910320	08:30	20	SW ADD	0.37	-0.73	0.69	-0.80	83.44	0.38	0.63
91-02	910320	08:31	20	SW ADD	-0.02	-0.65	0.15	-0.76	66.17	0.32	0.71
91-02	910320	08:32	19	SW ADD	0.45	-0.82	0.66	-1.05	79.81	0.50	0.51
91-02	910320	08:33	20	SW ADD	-0.53	-1.02	-0.63	-1.10	40.62	0.21	0.38
91-02	910320	08:34	20	SW ADD	-0.62	-0.99	-0.70	-1.09	58.04	0.29	0.31
91-02	910320	08:35	20	SW ADD	-0.68	-0.86	-0.73	-0.95	26.55	0.08	0.41
91-02	910320	08:36	20	SW ADD	-0.67	-0.98	-0.71	-1.06	28.46	0.05	0.41
91-02	910320	08:37	19	SW ADD	-0.61	-0.74	-0.69	-0.73	26.29	0.21	0.40
91-02	910320	08:38	20	SW ADD	-0.70	-0.93	-0.77	-1.01	32.39	0.07	0.40
91-02	910320	08:39	20	SW ADD	-0.58	-0.30	-0.65	-0.08	13.76	0.20	0.52
91-02	910320	08:40	19	SW ADD	0.09	-0.83	0.18	-1.13	63.68	0.65	0.28
91-02	910320	08:45	20	SW ADD	-0.69	-0.63	-0.76	-0.67	22.36	0.17	0.46
91-02	910320	09:00	20	SW ADD	-0.72	-1.04	-0.72	-1.05	57.87	0.09	0.05
91-02	910320	09:15	17	SW ADD	-0.73	-0.78	-0.77	-0.78	82.32	0.29	0.06
91-02	910320	09:30	19	SW ADD	-0.69	-0.85	-0.72	-0.82	60.60	0.22	0.09
91-02	910320	09:45	17	SW ADD	-0.36	-0.77	-0.53	-0.87	10.23	0.45	0.32
91-02	910320	10:00	18	SW ADD	-0.58	-0.69	-0.72	-0.88	60.72	0.49	0.30
91-02	910320	10:15	19	SW ADD	-0.51	-0.65	-0.67	-0.87	68.09	0.55	0.29

Table 2. cont.

EXPT	DATE	START	N	SIMCOND	XMEAN	YMEAN	XMED	YMED	THETA	XELP	YELP
91-02	910320	10:30	18	SW ADD	-0.66	-0.44	-0.71	-0.21	78.54	0.54	0.16
91-02	910320	15:00	19	SW ST	-0.59	-0.39	-0.62	-0.31	2.32	0.16	0.51
91-02	910320	15:05	19	SW ST	-0.61	-0.47	-0.66	-0.62	86.38	0.56	0.15
91-02	910320	15:10	18	SW ST	-0.52	-0.60	-0.63	-0.80	73.72	0.54	0.23
91-02	910320	15:15	20	SW ST	-0.47	-0.61	-0.62	-0.77	62.04	0.50	0.26
91-02	910320	15:20	18	SW ST	-0.58	-0.42	-0.69	-0.26	16.83	0.27	0.46
91-02	910320	15:25	20	SW ST	-0.65	-0.40	-0.69	-0.19	79.57	0.45	0.12
91-02	910320	15:30	19	SW ST	-0.60	-0.49	-0.66	-0.57	79.78	0.49	0.16
91-02	910321	09:00	18	D02 RED	-0.40	-0.23	-0.58	0.07	22.15	0.41	0.60
91-02	910321	09:15	18	D02 RED	-0.60	-0.14	-0.62	0.03	1.65	0.12	0.49
91-02	910321	09:30	19	D02 RED	-0.36	-0.30	-0.62	-0.02	44.96	0.68	0.33
91-02	910321	09:45	19	D02 RED	-0.59	-0.17	-0.62	0.01	87.55	0.51	0.14
91-02	910321	10:00	16	D02 RED	-0.59	-0.33	-0.63	-0.01	82.49	0.61	0.17
91-02	910321	10:15	18	D02 RED	-0.48	-0.35	-0.61	-0.01	75.97	0.55	0.34
91-02	910321	10:30	19	D02 RED	-0.46	-0.45	-0.61	0.00	69.05	0.63	0.24
91-02	910321	10:45	19	D02 RED	-0.34	-0.52	-0.54	-0.55	59.00	0.67	0.20
91-02	910321	11:00	18	D02 RED	-0.49	-0.55	-0.64	-0.51	67.84	0.64	0.16
91-02	910321	11:15	17	D02 RED	-0.47	-0.50	-0.59	-0.55	67.31	0.62	0.16
91-02	910321	11:30	19	D02 RED	-0.55	-0.36	-0.57	-0.02	85.21	0.50	0.15
91-02	910321	11:45	19	D02 RED	-0.44	-0.46	-0.62	-0.03	60.36	0.61	0.24
91-02	910321	12:00	19	D02 RED	-0.52	-0.36	-0.62	-0.04	65.01	0.52	0.23
91-02	910321	12:15	19	D02 RED	-0.38	-0.48	-0.41	-0.32	69.38	0.51	0.16
91-02	910321	12:30	20	D02 RED	-0.42	-0.65	-0.43	-0.94	83.54	0.49	0.26
91-02	910321	12:45	20	D02 RED	-0.45	-0.58	-0.54	-0.79	73.80	0.49	0.33
91-02	910321	13:00	19	D02 RED	-0.56	-0.48	-0.60	-0.38	0.96	0.14	0.49
91-02	910321	13:15	19	D02 RED	-0.46	-0.39	-0.56	-0.07	10.13	0.29	0.47
91-02	910321	13:30	20	D02 RED	-0.50	-0.52	-0.60	-0.80	89.25	0.53	0.31
91-02	910321	13:45	20	D02 RED	-0.53	-0.51	-0.51	-0.51	11.32	0.15	0.46
91-02	910321	14:00	19	D02 RED	-0.51	-0.42	-0.58	-0.34	13.63	0.29	0.41
91-02	910321	14:15	19	D02 RED	-0.61	-0.46	-0.67	-0.31	4.80	0.14	0.47
91-02	910321	14:30	20	D02 RED	-0.52	-0.39	-0.65	-0.12	19.00	0.27	0.50
91-02	910321	14:45	19	D02 RED	-0.36	-0.59	-0.57	-0.91	55.60	0.58	0.34
91-02	910321	15:00	20	D02 RED	-0.59	-0.41	-0.63	-0.28	85.00	0.51	0.21
91-02	910321	15:15	19	D02 RED	-0.26	-0.48	-0.42	-0.81	50.82	0.58	0.38
91-02	910321	15:30	19	D02 RED	-0.41	-0.58	-0.55	-0.81	70.35	0.52	0.44
91-06	910424	15:00	20	FW ST	-0.25	-0.08	-0.42	-0.03	52.74	0.42	0.49
91-06	910424	15:05	20	FW ST	-0.08	-0.14	0.11	-0.23	37.78	0.53	0.38
91-06	910424	15:10	20	FW ST	-0.11	0.10	0.02	0.17	18.03	0.39	0.33
91-06	910424	15:15	20	FW ST	-0.02	-0.05	-0.01	0.15	36.26	0.51	0.55
91-06	910424	15:20	20	FW ST	-0.03	0.05	0.14	0.04	20.70	0.43	0.34
91-06	910424	15:25	19	FW ST	-0.29	0.05	-0.43	0.10	55.78	0.35	0.55
91-06	910424	15:30	20	FW ST	-0.10	-0.05	-0.06	-0.05	55.77	0.37	0.45
91-06	910425	08:00	19	SW ADD	-0.23	-0.24	-0.31	-0.18	54.65	0.60	0.46
91-06	910425	08:05	20	SW ADD	-0.42	-0.01	-0.52	0.02	61.35	0.37	0.43
91-06	910425	08:10	20	SW ADD	-0.39	-0.08	-0.55	0.14	60.61	0.49	0.38
91-06	910425	08:15	19	SW ADD	-0.19	0.02	-0.39	0.25	53.33	0.42	0.57
91-06	910425	08:20	20	SW ADD	-0.04	-0.15	-0.06	0.05	29.85	0.60	0.47
91-06	910425	08:25	20	SW ADD	-0.38	-0.18	-0.51	-0.11	33.14	0.34	0.49
91-06	910425	08:30	20	SW ADD	-0.43	-0.03	-0.47	0.04	14.27	0.36	0.41
91-06	910425	08:31	20	SW ADD	-0.36	-0.05	-0.43	-0.01	74.39	0.43	0.42

Table 2. cont.

EXPT	DATE	START	N	SIMCOND	XMEAN	YMEAN	XMED	YMED	THETA	XELP	YELP
91-06	910425	08:32	20	SW ADD	-0.35	-0.59	-0.25	-1.07	69.80	0.69	0.22
91-06	910425	08:33	20	SW ADD	-0.52	-0.65	-0.51	-0.94	1.62	0.20	0.56
91-06	910425	08:34	20	SW ADD	-0.37	-0.83	-0.39	-1.08	10.30	0.12	0.55
91-06	910425	08:35	20	SW ADD	0.20	-0.87	0.25	-0.99	68.37	0.45	0.15
91-06	910425	08:36	20	SW ADD	-0.38	-0.94	-0.37	-1.10	4.06	0.09	0.47
91-06	910425	08:37	19	SW ADD	0.29	-0.97	0.35	-1.12	65.69	0.51	0.12
91-06	910425	08:38	20	SW ADD	-0.72	-0.61	-0.79	-0.68	15.53	0.13	0.38
91-06	910425	08:39	20	SW ADD	0.26	-0.34	0.20	-0.39	42.83	0.35	0.22
91-06	910425	08:40	20	SW ADD	-0.19	-0.90	-0.17	-1.04	84.44	0.38	0.11
91-06	910425	08:45	20	SW ADD	-0.40	-0.97	-0.36	-1.01	48.31	0.24	0.12
91-06	910425	09:00	19	SW ADD	-0.79	-0.58	-0.83	-0.63	84.50	0.56	0.08
91-06	910425	09:15	20	SW ADD	-0.53	-0.74	-0.58	-0.99	78.81	0.50	0.12
91-06	910425	09:30	20	SW ADD	-0.56	-0.71	-0.59	-1.00	76.23	0.52	0.13
91-06	910425	09:45	19	SW ADD	-0.42	-0.42	-0.48	-0.24	78.54	0.52	0.28
91-06	910425	10:00	19	SW ADD	-0.25	-0.82	-0.41	-1.00	68.96	0.35	0.42
91-06	910425	10:15	19	SW ADD	-0.29	-0.49	-0.37	-0.45	59.40	0.59	0.33
91-06	910425	10:30	20	SW ADD	-0.46	-0.54	-0.51	-0.78	81.03	0.58	0.17
91-06	910425	15:00	19	SW ST	-0.45	-0.68	-0.61	-1.00	3.78	0.39	0.59
91-06	910425	15:05	19	SW ST	-0.53	-0.78	-0.59	-1.08	82.74	0.61	0.22
91-06	910425	15:10	20	SW ST	-0.47	-0.75	-0.57	-1.06	89.80	0.55	0.30
91-06	910425	15:15	20	SW ST	-0.39	-0.65	-0.58	-1.01	74.33	0.64	0.40
91-06	910425	15:20	20	SW ST	-0.43	-0.58	-0.48	-0.84	79.05	0.60	0.30
91-06	910425	15:25	19	SW ST	-0.48	-0.45	-0.61	-0.33	79.32	0.55	0.34
91-06	910425	15:30	18	SW ST	-0.35	-0.52	-0.45	-0.60	65.34	0.63	0.41
91-06	910426	09:00	19	D02 RED	-0.36	-0.02	-0.47	0.06	8.18	0.30	0.55
91-06	910426	09:15	19	D02 RED	-0.25	-0.05	-0.39	0.06	3.93	0.39	0.59
91-06	910426	09:30	20	D02 RED	-0.12	0.01	-0.16	0.08	72.72	0.50	0.42
91-06	910426	09:45	19	D02 RED	-0.25	-0.05	-0.37	0.02	80.77	0.53	0.32
91-06	910426	10:00	20	D02 RED	-0.28	-0.02	-0.36	0.06	15.05	0.32	0.52
91-06	910426	10:15	20	D02 RED	-0.27	-0.13	-0.40	0.05	84.60	0.62	0.42
91-06	910426	10:30	20	D02 RED	-0.29	-0.11	-0.46	0.00	72.08	0.51	0.39
91-06	910426	10:45	20	D02 RED	-0.27	-0.31	-0.33	-0.57	82.63	0.63	0.30
91-06	910426	11:00	20	D02 RED	-0.15	-0.18	-0.24	0.00	74.97	0.66	0.37
91-06	910426	11:15	20	D02 RED	-0.23	-0.14	-0.26	0.01	83.47	0.56	0.38
91-06	910426	11:30	20	D02 RED	-0.17	-0.03	-0.20	0.00	61.60	0.45	0.37
91-06	910426	11:45	19	D02 RED	-0.09	-0.33	-0.26	-0.05	38.27	0.33	0.60
91-06	910426	12:00	20	D02 RED	0.06	-0.39	0.17	-0.33	54.86	0.53	0.47
91-06	910426	12:15	20	D02 RED	0.05	-0.53	0.17	-0.59	52.34	0.56	0.48
91-06	910426	12:30	18	D02 RED	-0.12	-0.50	-0.30	-0.50	84.52	0.51	0.46
91-06	910426	12:45	20	D02 RED	-0.13	-0.48	-0.28	-0.52	53.20	0.45	0.51
91-06	910426	13:00	20	D02 RED	-0.15	-0.66	-0.29	-0.89	87.44	0.50	0.43
91-06	910426	13:15	19	D02 RED	-0.05	-0.46	-0.17	-0.53	53.90	0.53	0.48
91-06	910426	13:30	19	D02 RED	-0.14	-0.27	-0.11	-0.10	24.13	0.41	0.64
91-06	910426	13:45	20	D02 RED	-0.22	-0.30	-0.34	-0.24	77.82	0.53	0.46
91-06	910426	14:00	20	D02 RED	-0.23	-0.22	-0.21	0.00	5.51	0.39	0.60
91-06	910426	14:15	20	D02 RED	-0.20	-0.18	-0.17	0.02	6.02	0.34	0.64
91-06	910426	14:30	20	D02 RED	-0.18	0.02	-0.32	0.18	6.50	0.42	0.57
91-06	910426	14:45	20	D02 RED	-0.14	-0.14	-0.21	0.06	82.75	0.57	0.41
91-06	910426	15:00	19	D02 RED	-0.14	-0.21	-0.19	-0.08	88.26	0.61	0.46
91-06	910426	15:15	20	D02 RED	-0.25	-0.01	-0.30	0.04	17.45	0.32	0.55
91-06	910426	15:30	20	D02 RED	-0.16	0.08	-0.19	0.09	76.76	0.50	0.38

Table 2. cont.

EXPT	DATE	START	N	SIMCOND	XMEAN	YMEAN	XMED	YMED	THETA	XELP	YELP
91-07	910514	15:00	19	FW ST	0.00	-0.02	-0.09	0.17	4.01	0.59	0.43
91-07	910514	15:05	19	FW ST	-0.06	-0.06	-0.29	-0.04	12.91	0.50	0.23
91-07	910514	15:10	20	FW ST	0.25	-0.13	0.43	-0.01	55.65	0.44	0.55
91-07	910514	15:15	20	FW ST	0.04	-0.21	-0.03	-0.20	87.75	0.33	0.50
91-07	910514	15:20	19	FW ST	0.13	0.01	0.24	0.03	77.25	0.32	0.55
91-07	910514	15:25	20	FW ST	-0.07	-0.09	-0.23	0.14	85.00	0.51	0.60
91-07	910514	15:30	18	FW ST	-0.16	0.11	-0.40	0.19	6.92	0.56	0.35
91-07	910515	08:00	19	SW ADD	0.15	0.00	0.04	0.20	15.39	0.51	0.44
91-07	910515	08:05	19	SW ADD	0.24	0.23	0.22	0.32	57.63	0.23	0.50
91-07	910515	08:10	19	SW ADD	0.09	-0.09	0.16	-0.03	39.24	0.38	0.62
91-07	910515	08:15	19	SW ADD	-0.17	-0.31	-0.14	-0.40	25.83	0.41	0.60
91-07	910515	08:20	20	SW ADD	-0.32	-0.29	-0.53	-0.42	23.60	0.42	0.69
91-07	910515	08:25	20	SW ADD	-0.45	-0.10	-0.58	-0.11	55.57	0.59	0.33
91-07	910515	08:30	19	SW ADD	0.08	0.02	0.02	0.29	72.44	0.60	0.65
91-07	910515	08:31	19	SW ADD	-0.10	-0.09	-0.12	0.21	48.30	0.28	0.80
91-07	910515	08:32	19	SW ADD	-0.32	-0.48	-0.65	-0.64	52.65	0.34	0.68
91-07	910515	08:33	20	SW ADD	-0.64	-1.01	-0.71	-1.08	64.00	0.27	0.35
91-07	910515	08:34	20	SW ADD	-0.71	-0.95	-0.76	-1.10	18.51	0.12	0.39
91-07	910515	08:35	19	SW ADD	-0.67	-1.01	-0.70	-1.04	43.52	0.06	0.16
91-07	910515	08:36	20	SW ADD	-0.75	-0.94	-0.76	-0.88	1.15	0.07	0.17
91-07	910515	08:37	18	SW ADD	-0.65	-1.08	-0.65	-1.10	20.49	0.10	0.06
91-07	910515	08:38	19	SW ADD	-0.54	-1.02	-0.60	-1.09	76.65	0.16	0.29
91-07	910515	08:39	20	SW ADD	-0.61	-0.84	-0.61	-0.79	83.79	0.16	0.11
91-07	910515	08:40	19	SW ADD	-0.51	-0.83	-0.45	-0.82	78.20	0.07	0.18
91-07	910515	08:45	20	SW ADD	-0.69	-1.14	-0.68	-1.16	57.69	0.11	0.06
91-07	910515	09:00	19	SW ADD	-0.54	-0.75	-0.65	-0.92	27.94	0.26	0.48
91-07	910515	09:15	18	SW ADD	-0.49	-0.58	-0.51	-0.35	7.51	0.25	0.46
91-07	910515	09:30	18	SW ADD	-0.42	-0.50	-0.59	-0.21	63.71	0.47	0.37
91-07	910515	09:45	19	SW ADD	-0.49	-0.58	-0.55	-0.71	75.07	0.50	0.25
91-07	910515	10:00	18	SW ADD	-0.32	-0.48	-0.32	-0.27	56.41	0.53	0.28
91-07	910515	10:15	18	SW ADD	-0.57	-0.60	-0.67	-0.80	72.04	0.53	0.23
91-07	910515	10:30	19	SW ADD	-0.62	-0.42	-0.66	-0.37	15.53	0.17	0.43
91-07	910515	15:00	19	SW ST	-0.53	-0.92	-0.58	-1.14	84.54	0.42	0.19
91-07	910515	15:05	19	SW ST	-0.43	-0.89	-0.45	-1.12	81.94	0.44	0.22
91-07	910515	15:10	20	SW ST	-0.61	-0.85	-0.62	-1.11	82.36	0.44	0.11
91-07	910515	15:15	20	SW ST	-0.55	-0.85	-0.59	-1.11	84.21	0.44	0.16
91-07	910515	15:20	19	SW ST	-0.56	-0.74	-0.56	-1.07	86.24	0.48	0.14
91-07	910515	15:25	20	SW ST	-0.45	-0.90	-0.46	-1.12	68.58	0.44	0.20
91-07	910515	15:30	20	SW ST	-0.48	-0.88	-0.56	-1.05	72.32	0.40	0.23
91-07	910516	09:00	19	D02 RED	-0.37	-0.25	-0.41	-0.03	26.54	0.22	0.58
91-07	910516	09:15	19	D02 RED	-0.50	-0.30	-0.66	-0.24	0.61	0.38	0.59
91-07	910516	09:30	19	D02 RED	-0.46	-0.46	-0.58	-0.59	8.33	0.36	0.65
91-07	910516	09:45	20	D02 RED	-0.33	-0.39	-0.59	-0.16	34.99	0.44	0.60
91-07	910516	10:00	20	D02 RED	-0.45	-0.62	-0.54	-0.64	22.59	0.33	0.41
91-07	910516	10:15	19	D02 RED	0.07	-0.28	0.14	-0.26	60.71	0.41	0.70
91-07	910516	10:30	20	D02 RED	-0.09	-0.43	-0.04	-0.46	54.11	0.30	0.54
91-07	910516	10:45	20	D02 RED	0.14	-0.33	0.26	-0.17	58.80	0.31	0.63
91-07	910516	11:00	19	D02 RED	-0.23	-0.28	-0.27	-0.17	34.87	0.34	0.69
91-07	910516	11:15	20	D02 RED	-0.13	-0.37	-0.08	-0.37	41.83	0.54	0.43
91-07	910516	11:30	19	D02 RED	0.22	-0.46	0.32	-0.60	54.88	0.37	0.56

Table 2. cont.

EXPT	DATE	START	N	SIMCOND	XMEAN	YMEAN	XMED	YMED	THETA	XELP	YELP
91-07	910516	11:45	19	D02 RED	-0.24	-0.49	-0.15	-0.54	37.42	0.44	0.30
91-07	910516	12:00	19	D02 RED	-0.23	-0.38	-0.29	-0.35	77.38	0.22	0.39
91-07	910516	12:15	18	D02 RED	-0.16	-0.61	-0.23	-0.59	80.06	0.27	0.45
91-07	910516	12:30	20	D02 RED	-0.06	-0.65	0.07	-0.79	28.70	0.58	0.40
91-07	910516	12:45	19	D02 RED	-0.26	-0.59	-0.34	-0.63	1.82	0.43	0.38
91-07	910516	13:00	19	D02 RED	-0.34	-0.46	-0.55	-0.51	34.64	0.32	0.53
91-07	910516	13:15	19	D02 RED	-0.40	-0.39	-0.50	-0.27	32.55	0.25	0.45
91-07	910516	13:30	19	D02 RED	-0.50	-0.34	-0.66	-0.29	73.25	0.48	0.35
91-07	910516	13:45	19	D02 RED	-0.29	-0.19	-0.37	-0.17	28.20	0.43	0.53
91-07	910516	14:00	19	D02 RED	0.00	-0.34	-0.03	-0.45	25.00	0.51	0.56
91-07	910516	14:15	19	D02 RED	-0.30	-0.47	-0.34	-0.44	18.78	0.45	0.50
91-07	910516	14:30	19	D02 RED	-0.36	-0.56	-0.51	-0.78	84.33	0.60	0.34
91-07	910516	14:45	19	D02 RED	-0.46	-0.27	-0.50	-0.49	4.88	0.27	0.72
91-07	910516	15:00	19	D02 RED	-0.55	-0.51	-0.61	-0.93	87.80	0.71	0.23
91-07	910516	15:15	19	D02 RED	-0.58	-0.68	-0.65	-0.99	76.54	0.50	0.17
91-07	910516	15:30	18	D02 RED	-0.61	-0.61	-0.64	-0.50	81.74	0.45	0.10

Table 3. Fork lengths and wet weights (means and standard deviations) of fish used in experiments (1985 and 1991).

EXPT 1985-03

FISH NO.	LENGTH (MM)	WET WT (G)
1	54	1.372
2	60	2.123
3	53	1.263
4	50	1.132
5	48	0.940
6	58	1.611
7	52	1.250
8	53	1.317
9	50	1.166
10	47	0.947
11	50	1.000
12	56	1.030
13	62	2.123
14	58	1.698
15	60	1.887
16	53	1.281
17	53	1.253
18	59	1.880
19	57	1.645
20	51	1.240
MEAN	54	1.408
S.D.	4	0.374

EXPT 1985-07

FISH NO.	LENGTH (MM)	WET WT (G)
1	72	3.48
2	77	4.38
3	62	2.06
4	62	2.12
5	68	3.02
6	66	2.80
7	62	2.22
8	69	3.22
9	70	2.84
10	54	1.40
11	69	3.08
12	75	4.14
13	60	1.86
14	79	4.30
15	71	3.36
16	71	3.38
17	70	3.10
18	69	3.00
19	65	2.62
20	62	2.60
MEAN	68	2.95
S.D.	6	0.79

Table 3. cont.

EXPT 1985-10

FISH NO.	LENGTH (MM)	WET WT (G)
1	81	4.82
2	83	5.16
3	77	4.20
4	81	5.08
5	81	5.02
6	83	5.56
7	81	5.06
8	75	4.04
9	76	4.08
10	87	6.08
11	75	3.94
12	82	5.02
13	76	4.08
14	73	3.42
15	84	5.54
16	73	3.72
17	74	3.74
18	75	4.12
19	78	4.16
20	76	4.08
MEAN	79	4.55
S.D.	4	0.73

EXPT 1991-01

FISH NO.	LENGTH (MM)	WET WT (G)
1	45	0.77769
2	43	0.68685
3	46	0.73253
4	41	0.60349
5	42	0.70499
6	43	0.70733
7	46	0.86330
8	48	0.91038
9	46	0.82737
10	43	0.70238
11	44	0.72513
12	45	0.72962
13	44	0.65858
14	45	0.76966
15	46	0.87994
16	41	0.65532
17	47	0.78630
18	49	0.86186
19	41	0.62598
20	48	0.93029
MEAN	45	0.75695
S.D.	2	0.09558

Table 3. cont.

EXPT 1991-02

FISH NO.	LENGTH (MM)	WET WT (G)
1	50	1.18903
2	50	1.09227
3	49	1.00367
4	46	0.84427
5	48	1.07587
6	49	1.04466
7	50	1.13319
8	49	1.06444
9	48	0.88420
10	45	0.81538
11	47	0.94811
12	50	1.08400
13	48	0.90483
14	52	1.20345
15	45	0.82473
16	49	1.03615
17	50	1.08837
18	55	1.27284
19	50	1.07722
20	48	0.94373
MEAN	49	1.02652
S.D.	2	0.12880

EXPT 1991-06

FISH NO.	LENGTH (MM)	WET WT (G)
1	62	2.25681
2	63	2.26495
3	66	2.32769
4	63	2.34372
5	65	2.62564
6	65	2.56396
7	62	2.35696
8	69	2.83497
9	64	2.53415
10	66	2.76977
11	62	2.30264
12	55	1.47842
13	66	2.64526
14	66	2.44062
15	66	2.82372
16	62	2.35426
17	64	2.33962
18	61	2.24754
19	60	2.10003
20	61	2.07783
MEAN	63	2.38443
S.D.	3	0.30683

EXPT 1991-07 WILD HARRISON RIVER CHINOOK

FISH NO.	LENGTH (MM)	WET WT (G)
1	49	0.91591
2	49	1.00537
3	48	0.84772
4	48	0.84057
5	51	1.10117
6	48	0.81220
7	46	0.83346
8	45	0.80907
9	48	0.85253
10	50	0.99714
11	48	1.00295
12	45	0.63844
13	47	0.81278
14	49	0.97327
15	47	1.00283
16	48	0.91355
17	45	0.74390
18	50	0.98961
19	48	0.96655
20	45	0.81479
MEAN	48	0.89369
S.D.	2	0.11150

Table 4. Increases in the salinity of the bottom zone of the WCS aquarium during the transition from riverine to estuarine conditions. Expt 1985-03 24, 25 April. These data were used to generate Figure 2.

ELAPSED TIME (H)	SALINITY (‰)
-0.50	0.1
-0.25	0.1
0.00	0.9
0.25	5.0
0.50	8.7
0.75	12.0
1.00	14.2
1.25	16.2
1.50	17.9
1.75	19.2
2.00	20.6
2.25	21.7
2.50	22.4
3.50	24.5
4.50	25.2
6.50	27.3
7.50	27.3

Table 5. Temporal changes in the number of fish (maximum n=20) occupying the fresh water zone under simulated estuarine conditions and during hypoxia. Expt 1991-06 26 April.
These data are presented graphically in Figure 3.

TIME (H)	NO. FISH	%	DISSOLVED OXYGEN TOP ZONE (MG/L)
09:00	11	55	11.1
09:05	11	55	11.2
09:10	10	50	11.2
09:15	11	55	11.2
09:20	12	60	11.2
09:25	14	70	11.2
09:30	12	60	11.2
09:35	14	70	11.2
09:40	11	55	10.8
09:45	10	50	10.4
09:50	11	55	9.9
09:55	9	45	9.7
10:00	12	60	9.2
10:05	12	60	8.9
10:10	13	65	8.5
10:15	11	55	8.1
10:20	11	55	7.7
10:25	15	75	7.4
10:30	11	55	7.1
10:35	11	55	6.8
10:40	9	45	6.5
10:45	10	50	6.3
10:50	7	35	6.1
10:55	12	60	5.9
11:00	7	35	5.6
11:05	12	60	5.4
11:10	8	40	5.2
11:15	7	35	5.0
11:20	9	45	4.9
11:25	10	50	4.7
11:30	9	45	4.6
11:35	3	15	4.5
11:40	5	25	4.3
11:45	3	15	4.2
11:50	4	20	4.1
11:55	1	5	4.0
12:00	3	15	3.8
12:05	0	0	3.7
12:10	0	0	3.6
12:15	3	15	3.5
12:20	3	15	3.5
12:25	2	10	3.4
12:30	3	15	3.3

Table 5. cont.

TIME (H)	NO. FISH	%	DISSOLVED OXYGEN TOP ZONE (MG/L)
12:35	1	5	3.3
12:40	1	5	3.4
12:45	1	5	3.7
12:50	2	10	4.1
12:55	2	10	4.5
13:00	1	5	4.8
13:05	4	20	5.2
13:10	1	5	5.5
13:15	3	15	5.7
13:20	3	15	6.1
13:25	8	40	6.4
13:30	5	25	6.6
13:35	6	30	6.8
13:40	3	15	7.0
13:45	4	20	7.3
13:50	5	25	7.5
13:55	5	25	7.7
14:00	8	40	7.9
14:05	8	40	8.1
14:10	12	60	8.2
14:15	10	50	8.3
14:20	7	35	8.5
14:25	10	50	8.6
14:30	10	50	8.8
14:35	11	55	8.9
14:40	9	45	9.1
14:45	10	50	9.2
14:50	11	55	9.2
14:55	9	45	9.3
15:00	9	45	9.3
15:05	3	15	9.4
15:10	6	30	9.6
15:15	9	45	9.7
15:20	9	45	9.8
15:25	10	50	9.9
15:30	13	65	9.9