

FRED Reports

**CANNERY CREEK INSTREAM TAGGING
PROJECT - 1983**

by
Terry Ellison
and
Jack Miller
Number 53



**Alaska Department of Fish & Game
Division of Fisheries Rehabilitation,
Enhancement and Development**

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ABSTRACT

As part of an investigation of ways to efficiently increase the numbers of eggs taken at Cannery Creek Hatchery, we studied the relationship between the time that pink salmon, *Oncorhynchus gorbuscha*, return to the facility and the time that they ripen. In the fall of 1983, fish were marked with an individually identifiable tag at a weir at the mouth of Cannery Creek. The tags were recovered when the fish were used to obtain eggs or when they were found spawned out in the creek. There was no statistically significant relationship found between the date of tagging and the date of maturation.

Key Words: *Oncorhynchus gorbuscha*, pink salmon, maturation timing, spawning.

INTRODUCTION

Improvements in technology and advancements in the field of fish culture have greatly increased the incubation capacity of the Cannery Creek Hatchery over the past 5 years. While this facility is capable of incubating large numbers of eggs, the size of the adult holding area has become the limiting factor. In order to achieve annual egg-take goals, the broodstock holding area must be loaded to capacity and used in the most efficient manner possible. In the interests of minimizing natural spawning and the mortality caused by the premature handling of fish, efficient management of adults is critical. This study was designed to determine the in-stream migratory patterns and the rate at which adult pink salmon ripen. Information from this study will be used to control the movement of fish so that they will be accessible when ready to spawn.

MATERIALS AND METHODS

From 1 August to 28 August 1983, seven groups of adult pink salmon were tagged (Table 1). Using Floy spaghetti tags, seven males and 251 females were marked. Each fish received a colored tag printed with a unique number. Also groups 3-7 were given an additional colored tag containing no number. The numbered tag was used to determine the absolute tagging date of a particular fish. The colored tag was used in an effort to observe the location of groups of tagged fish within the broodstock holding area.

The study area was composed of two large ponds, two fish weirs, a fish trap, and a stretch of creek (Figure 1). Fish entering the system were first enumerated as they passed through the down-

Table 1. Summary of tagging dates, numbers, and colors associated with pink salmon maturation study at Cannery Creek in 1983.

Group	Tagging dates	Number of tags	Color 1	Color 2
1	8/01 - 8/03	30	Orange	None
2	8/04 - 8/06	29	Red	None
3	8/07 - 8/10	42	White	Yellow
4	8/11 - 8/15	36	White	Green
5	8/16 - 8/20	50	Red	Orange
6	8/21 - 8/25	51	Red	White
7	8/26 - 8/28	20	Red	Green

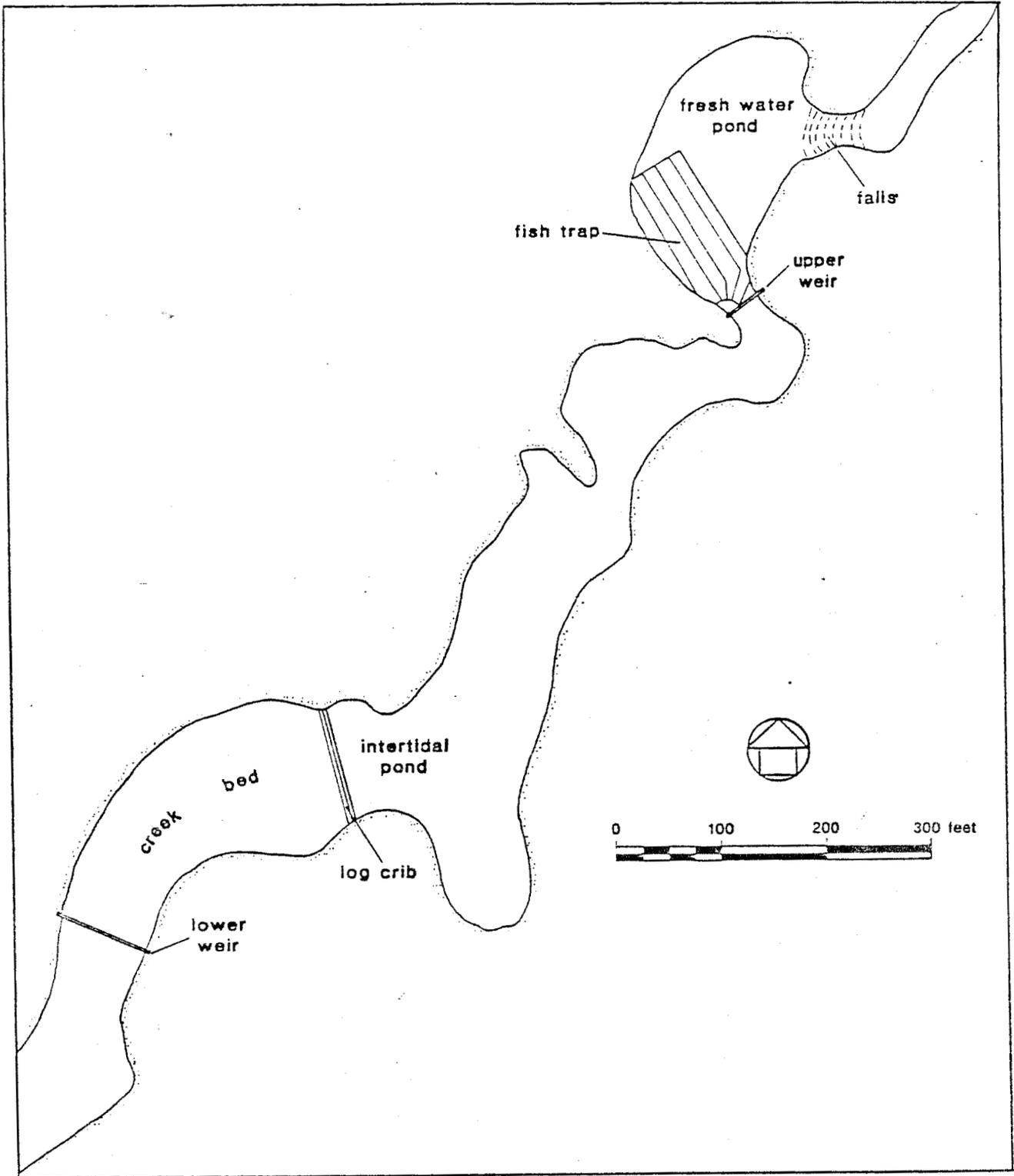


Figure 1. Study area in Cannery Creek.

stream weir. As the fish passed through this weir, tags were applied to 10 fish each day for 26 days (Appendix Table 1). After passing through the downstream weir, the fish swam upstream to the first of two ponds. Fish had access to the intertidal pond at all times of the day. Upon entering this area (200 x 35 x 1 m) the fish then swam upstream (200 m) to the second weir. Fish access to the upstream pond (85 x 40 x 1 m) was possible only when hatchery personnel opened the weir. It was necessary to monitor dissolved oxygen in the upper pond and to keep fish out when there were lethal conditions. Upon entering this pond, fish were captured in a 30- x 3- x 1-m fish trap constructed of 5- x 5-cm mesh chain-link fencing. Prior to taking eggs, fish were captured in the fish trap and sorted. They were then transferred to the upstream pond for additional ripening (*see* "passed" fish in Appendix Table 2). When taking eggs, an additional supply of fish were obtained by seining in the intertidal and upstream areas.

Fish were examined for tags during the following instances:

(1) when the fish had passed into the fish trap, (2) after the ripe fish had been seined, and (3) when moribund fish were removed from the face of the weirs.

The relationship between the date of tagging (i.e., date of passage at the lower weir) and the date of ripening was examined, using simple linear regression. In the first regression analysis, the independent variable was the date of tagging (day of the month since all fish were tagged in August), and the dependent variable was the number of days between tagging and recovery of the tag from a fish in spawning condition. For the second regression analysis, the independent variable was the same, and the dependent variable was the day of tag recovery from a spawning fish (expressed as the day of the year with 1 January = 1).

Attempts to visually observe the location of tagged fish in the adult holding areas were largely unsuccessful. This was primarily because the depth and width of the ponds made observations difficult. Also, in comparison to the total brood stock, a relatively small number of fish was tagged (258 tagged fish of 58,350 total fish held). Because many of the fish lost one or both tags, visual estimates were made even more difficult. On several occasions, fish were found with only the anchor portion of the tag intact; the colored portion of the tag had disappeared. Data used in this report came from the tag numbers of those fish recovered or handled in the sorting and egg-stripping processes.

RESULTS

Tag recoveries are listed in Appendix Table 2 and summarized in Table 2. Approximately one-third of all tags placed were eventually recovered (Table 2). Of the tags recovered, 60% were recovered from spawning fish, 30% from fish that died before ripening, and 10% from fish that spawned before reaching the egg-stripping area (Table 2). Approximately 58,000 fish were counted through the lower weir between 1 August and 2 September, while approximately 57,000 were counted through the upper weir between 11 August and 12 September (Appendix Table 3).

The regression analyses were performed on the data from the tags recovered from spawning fish (Appendix Table 4). The regression of days to maturity on date of tagging (Figure 2) was significant ($r^2 = .84$, $P < .001$). The estimated regression line follows:

Table 2. Tag recovery and pink salmon maturation at Cannery Creek in 1983.

Color group	Tagging dates	Number of tags	Total recoveries	Recoveries by Category			Recovery %
				Died before spawning	At spawning	Spawned out in stream	
1	8/01 - 8/03	30	11	2	8	1	37%
2	8/04 - 8/06	29	9	3	6	0	31%
3	8/07 - 8/10	42	16	5	10	1	38%
4	8/11 - 8/15	36	13	4	6	3	36%
5	8/16 - 8/20	50	16	6	8	2	32%
6	8/21 - 8/25	51	11	3	7	1	22%
7	8/26 - 8/28	20	10	2	7	1	50%
Sums		258	86	25	52	9	
Percent of total			33%	10%	20%	3%	
Percent of recoveries				30%	60%	10%	

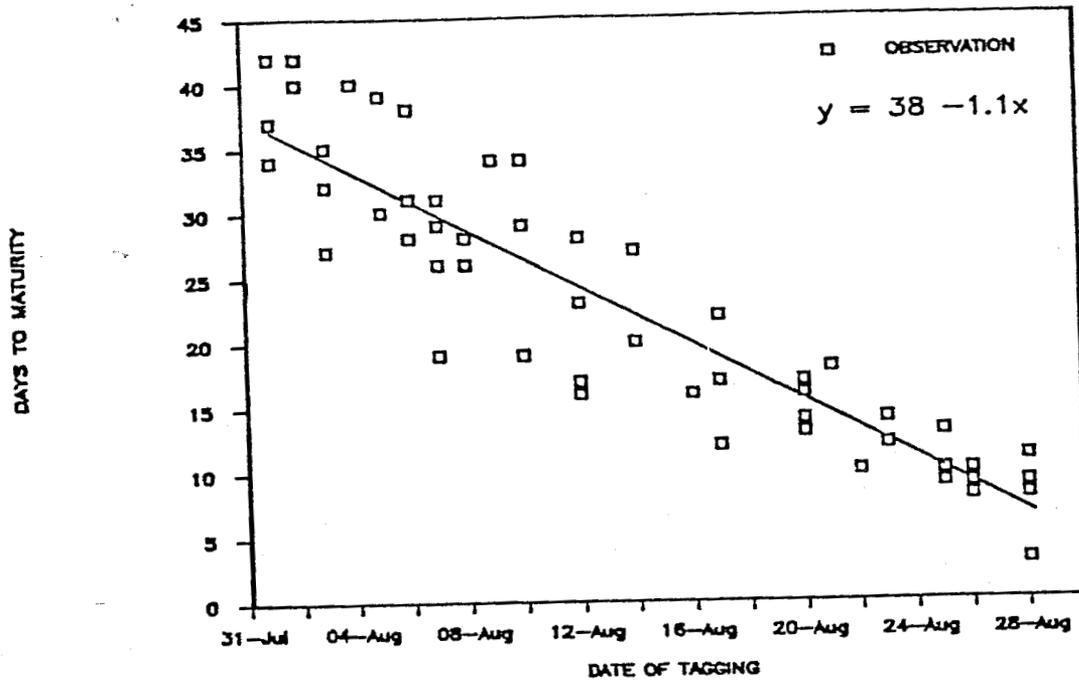


Figure 2. Number of days from tagging to maturity at the lower weir

$$y = 38 - 1.1x$$

where:

y = days to maturity

x = date of tagging.

Thus, for each day that a fish delays entering the lower weir, it takes approximately 1 day less for that fish to ripen.

When looking at the data from another perspective, there is no significant correlation ($r^2 = .06$, $P > .05$) between the date of tagging at the lower weir and the date of recovery (maturity) at the upper weir (Figure 3); fish tended to spawn during a particular 2-week period, irrespective of the date that they were tagged at the lower weir.

DISCUSSION AND RECOMMENDATIONS

In conclusion, further studies are needed to answer the following questions: (1) if fish held in intertidal areas for extended periods of time lose the desire to move into fresh water; (2) are any even-or odd-year differences in the maturation time and dates; and (3) do those fish that spawn in the intertidal areas enter the system from the later portions of the run?

The fish that were tagged in the first 50% of the run seemed to remain in the intertidal areas longer (an average of 1 day). This occurrence may be due to the closure of the upper weir for a period of 10 days after the first group of tagged fish was released, compared to a 7-day period for some of the fish that

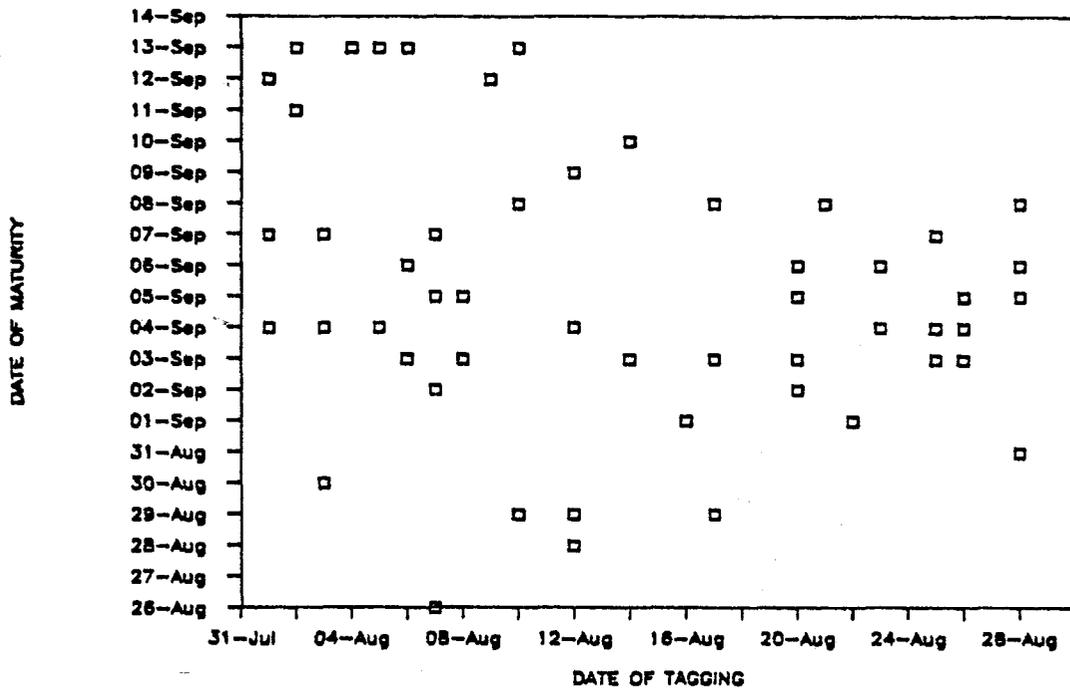


Figure 3. Observations of the date of maturity versus the date of tagging.

were tagged in the later 50% of the run. While the intertidal residence time may have been longer for the fish tagged in the first half of the run, they accounted for only 20% of the tagged fish known to have spawned in the intertidal area. Fish tagged in the first half of the run accounted for 61% of the fish that spawned in the freshwater areas. This suggests that the loss of fish to natural spawning does not occur when the earlier segments are held in intertidal areas for extended periods but, rather, that it occurs when the later fish are not allowed access to the freshwater ponds immediately after they enter the system.

It is our opinion that using tags of a neutral color (olive drab or brown) would reduce the rate of tag loss. Large numbers of gulls were present in the study area and were observed feeding on dead and dying fish. Brightly colored orange and red tags could have been misinterpreted by scavengers as blood clots, which could have caused them to pull the tags from the fish (the reason for finding fish with the anchor portion and no colored portion of the tag). Also, brightly colored tags implanted in males could have been torn loose when males were fighting territorial battles.

Perhaps the application of a larger number of tags for a fewer number of days and closer supervision of the tagging project would increase the efficiency of data retrieval and analysis. The application of a fungicide to fish after the application of tags would also aid in decreasing tagged-fish mortality (29% of tagged fish recovered were mortalities versus less than 20% for the general population).

ACKNOWLEDGMENTS

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APPENDIX

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Appendix Table 1. Tagging Data

Tag Date	Tag 1 Color	Tag 1 Number	Tag 2 Color	Sex
8/01	Orange	116346	None	F
8/01	Orange	116347	None	F
8/01	Orange	116348	None	M
8/01	Orange	116349	None	F
8/01	Orange	116350	None	F
8/01	Orange	116351	None	F
8/01	Orange	116353	None	M
8/01	Orange	116354	None	F
8/01	Orange	116355	None	M
8/01	Orange	116356	None	M
8/02	Orange	116357	None	F
8/02	Orange	116358	None	F
8/02	Orange	116359	None	F
8/02	Orange	116360	None	F
8/02	Orange	116361	None	F
8/02	Orange	116362	None	F
8/02	Orange	116365	None	F
8/02	Orange	116366	None	F
8/02	Orange	116367	None	F
8/02	Orange	116372	None	F
8/03	Orange	116368	None	F
8/03	Orange	116369	None	F
8/03	Orange	116370	None	F
8/03	Orange	116371	None	F
8/03	Orange	116373	None	F
8/03	Orange	116374	None	F
8/03	Orange	116375	None	F
8/03	Orange	116376	None	F
8/03	Orange	116377	None	F
8/03	Orange	116379	None	F

- CONTINUED -

Appendix Table 1. Continued

Tag Date	Tag 1 Color	Tag 1 Number	Tag 2 Color	Sex
8/04	Red	300002	None	F
8/04	Red	300003	None	F
8/04	Red	300004	None	F
8/04	Red	300005	None	F
8/04	Red	300006	None	F
8/04	Red	300007	None	F
8/04	Red	300008	None	F
8/04	Red	300009	None	M
8/04	Red	300011	None	M
8/05	Red	300012	None	F
8/05	Red	300013	None	F
8/05	Red	300014	None	F
8/05	Red	300015	None	F
8/05	Red	300016	None	F
8/05	Red	300017	None	F
8/05	Red	300018	None	F
8/05	Red	300019	None	F
8/05	Red	300020	None	F
8/05	Red	300021	None	F
8/06	Red	300022	None	M
8/06	Red	300023	None	F
8/06	Red	300024	None	F
8/06	Red	300025	None	F
8/06	Red	300026	None	F
8/06	Red	300027	None	F
8/06	Red	300028	None	F
8/06	Red	300029	None	F
8/06	Red	300030	None	F
8/06	Red	300031	None	F
8/07	White	200175	Yellow	F

- CONTINUED -

Appendix Table 1. Continued

Tag Date	Tag 1 Color	Tag 1 Number	Tag 2 Color	Sex
8/07	White	200181	Yellow	F
8/07	White	200183	Yellow	F
8/07	White	200184	Yellow	F
8/07	White	200188	Yellow	F
8/07	White	200193	Yellow	F
8/07	White	200194	Yellow	F
8/07	White	200198	Yellow	F
8/07	White	200199	Yellow	F
8/07	White	200200	Yellow	F
8/08	White	200162	Yellow	F
8/08	White	200163	Yellow	F
8/08	White	200164	Yellow	F
8/08	White	200165	Yellow	F
8/08	White	200166	Yellow	F
8/08	White	200167	Yellow	F
8/08	White	200168	Yellow	F
8/08	White	200169	Yellow	F
8/08	White	200171	Yellow	F
8/08	White	200172	Yellow	F
8/08	White	200173	Yellow	F
8/08	White	200174	Yellow	F
8/09	White	200141	Yellow	F
8/09	White	200142	Yellow	F
8/09	White	200143	Yellow	F
8/09	White	200144	Yellow	F
8/09	White	200145	Yellow	F
8/09	White	200146	Yellow	F
8/09	White	200147	Yellow	F
8/09	White	200148	Yellow	F
8/09	White	200149	Yellow	F
8/09	White	200150	Yellow	F

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Appendix Table 1. Continued

Tag Date	Tag 1 Color	Tag 1 Number	Tag 2 Color	Sex
8/10	White	200151	Yellow	F
8/10	White	200152	Yellow	F
8/10	White	200153	Yellow	F
8/10	White	200154	Yellow	F
8/10	White	200155	Yellow	F
8/10	White	200156	Yellow	F
8/10	White	200157	Yellow	F
8/10	White	200158	Yellow	F
8/10	White	200159	Yellow	F
8/10	White	200160	Yellow	F
8/12	White	200106	Green	F
8/12	White	200107	Green	F
8/12	White	200108	Green	F
8/12	White	200109	Green	F
8/12	White	200110	Green	F
8/12	White	200111	Green	F
8/12	White	200112	Green	F
8/12	White	200113	Green	F
8/12	White	200114	Green	F
8/12	White	200116	Green	F
8/13	White	200117	Green	F
8/13	White	200118	Green	F
8/13	White	200119	Green	F
8/13	White	200120	Green	F
8/13	White	200121	Green	F
8/13	White	200122	Green	F
8/13	White	200123	Green	F
8/13	White	200124	Green	F
8/13	White	200125	Green	F
8/13	White	200126	Green	F

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Appendix Table 1. Continued

Tag Date	Tag 1 Color	Tag 1 Number	Tag 2 Color	Sex
8/14	White	200127	Green	F
8/14	White	200128	Green	F
8/14	White	200129	Green	F
8/14	White	200130	Green	F
8/14	White	200131	Green	F
8/14	White	200132	Green	F
8/14	White	200133	Green	F
8/14	White	200134	Green	F
8/14	White	200135	Green	F
8/14	White	200136	Green	F
8/15	White	200137	Green	F
8/15	White	200138	Green	F
8/15	White	200139	Green	F
8/15	White	200140	Green	F
8/15	White	200071	Green	F
8/15	White	200072	Green	F
8/16	Red	300032	Orange	F
8/16	Red	300033	Orange	F
8/16	Red	300034	Orange	F
8/16	Red	300035	Orange	F
8/16	Red	300036	Orange	F
8/16	Red	300037	Orange	F
8/16	Red	300038	Orange	F
8/16	Red	300039	Orange	F
8/16	Red	300040	Orange	F
8/16	Red	300041	Orange	F

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Appendix Table 1. Continued

Tag Date	Tag 1 Color	Tag 1 Number	Tag 2 Color	Sex
8/17	Red	300042	Orange	F
8/17	Red	300043	Orange	F
8/17	Red	300044	Orange	F
8/17	Red	300045	Orange	F
8/17	Red	300046	Orange	F
8/17	Red	300047	Orange	F
8/17	Red	300048	Orange	F
8/17	Red	300049	Orange	F
8/17	Red	300050	Orange	F
8/17	Red	300051	Orange	F
8/18	Red	300052	Orange	F
8/18	Red	300053	Orange	F
8/18	Red	300054	Orange	F
8/18	Red	300055	Orange	F
8/18	Red	300056	Orange	F
8/18	Red	300057	Orange	F
8/18	Red	300058	Orange	F
8/18	Red	300059	Orange	F
8/18	Red	300060	Orange	F
8/18	Red	300061	Orange	F
8/19	Red	300062	Orange	F
8/19	Red	300063	Orange	F
8/19	Red	300064	Orange	F
8/19	Red	300065	Orange	F
8/19	Red	300066	Orange	F
8/19	Red	300067	Orange	F
8/19	Red	300068	Orange	F
8/19	Red	300069	Orange	F
8/19	Red	300070	Orange	F
8/19	Red	300071	Orange	F

- CONTINUED -

Appendix Table 1. Continued

Tag Date	Tag 1 Color	Tag 1 Number	Tag 2 Color	Sex
8/20	Red	300072	Orange	F
8/20	Red	300073	Orange	F
8/20	Red	300074	Orange	F
8/20	Red	300075	Orange	F
8/20	Red	300076	Orange	F
8/20	Red	300077	Orange	F
8/20	Red	300078	Orange	F
8/20	Red	300079	Orange	F
8/20	Red	300080	Orange	F
8/20	Red	300081	Orange	F
8/21	Red	300082	White	F
8/21	Red	300083	White	F
8/21	Red	300084	White	F
8/21	Red	300085	White	F
8/21	Red	300086	White	F
8/21	Red	300087	White	F
8/21	Red	300088	White	F
8/21	Red	300089	White	F
8/21	Red	300090	White	F
8/21	Red	300091	White	F
8/22	Red	300092	White	F
8/22	Red	300093	White	F
8/22	Red	300094	White	F
8/22	Red	300095	White	F
8/22	Red	300096	White	F
8/22	Red	300097	White	F
8/22	Red	300098	White	F
8/22	Red	300101	White	F
8/22	Red	300102	White	F
8/22	Red	300103	White	F

- CONTINUED -

Appendix Table 1. Continued

Tag Date	Tag 1 Color	Tag 1 Number	Tag 2 Color	Sex
8/23	Red	300104	White	F
8/23	Red	300105	White	F
8/23	Red	300106	White	F
8/23	Red	300107	White	F
8/23	Red	300108	White	F
8/23	Red	300109	White	F
8/23	Red	300110	White	F
8/23	Red	300111	White	F
8/23	Red	300112	White	F
8/23	Red	300113	White	F
8/24	Red	300114	White	F
8/24	Red	300115	White	F
8/24	Red	300116	White	F
8/24	Red	300117	White	F
8/24	Red	300118	White	F
8/24	Red	300119	White	F
8/24	Red	300120	White	F
8/24	Red	300121	White	F
8/24	Red	300122	White	F
8/24	Red	300123	White	F
8/25	Red	300124	White	F
8/25	Red	300125	White	F
8/25	Red	300126	White	F
8/25	Red	300127	White	F
8/25	Red	300128	White	F
8/25	Red	300129	White	F
8/25	Red	300130	White	F
8/25	Red	300131	White	F
8/25	Red	300132	White	F
8/25	Red	300133	White	F
8/25	Red	300134	White	F

-- CONTINUED --

Appendix Table 1. Continued

Tag Date	Tag 1 Color	Tag 1 Number	Tag 2 Color	Sex
8/26	Red	300135	Green	F
8/26	Red	300136	Green	F
8/26	Red	300137	Green	F
8/26	Red	300138	Green	F
8/26	Red	300139	Green	F
8/26	Red	300140	Green	F
8/26	Red	300141	Green	F
8/26	Red	300142	Green	F
8/26	Red	300143	Green	F
8/26	Red	300145	Green	F
8/28	Red	300146	Green	F
8/28	Red	300147	Green	F
8/28	Red	300148	Green	F
8/28	Red	300149	Green	F
8/28	Red	300150	Green	F
8/28	Red	300154	Green	F
8/28	Red	300155	Green	F
8/28	Red	300156	Green	F
8/28	Red	300157	Green	F
8/28	Red	300158	Green	F

Appendix Table 2. Tag Recovery

Event Date	Tag Number	Event	Area	Tag Date
8/12	200116	Passed	Pond	8/12
8/14	200123	Passed	Pond	8/13
8/15	200129	Passed	Pond	8/14
8/15	200146	Passed	Pond	8/09
8/15	200158	Passed	Pond	8/10
8/16	200122	Passed	Pond	8/13
8/16	200137	Passed	Pond	8/15
8/16	200152	Passed	Pond	8/10
8/17	200139	Passed	Pond	8/15
8/17	300033	Passed	Pond	8/16
8/17	300034	Passed	Pond	8/16
8/17	300039	Passed	Pond	8/16
8/17	300040	Passed	Pond	8/16
8/18	116353	Passed	Pond	8/01
8/18	200169	Mortality	L.W.	8/08
8/18	200172	Passed	Pond	8/08
8/18	300044	Passed	Pond	8/17
8/18	300047	Passed	Pond	8/17
8/18	300048	Passed	Pond	8/17
8/18	300049	Passed	Pond	8/17
8/19	200138	Passed	Pond	8/15
8/19	300003	Passed	Pond	8/04
8/21	200141	Mortality	L.W.	8/09
8/22	300086	Passed	Pond	8/21
8/22	300095	Passed	Pond	8/22
8/26	116358	S.O.	Pond	8/02
8/26	200193	Spawned	Pond	8/07
8/27	200134	Mortality	Pond	8/14
8/27	200139	Mortality	Pond	8/15

- CONTINUED -

Appendix Table 2. Continued

Event Date	Tag Number	Event	Area	Tag Date
8/28	200116	Spawned	Pond	8/12
8/28	200123	Mortality	Pond	8/13
8/28	200166	S.O.	Pond	8/08
8/29	200108	Spawned	L.W.	8/12
8/29	200118	Mortality	Pond	8/13
8/29	200153	Spawned	Pond	8/10
8/29	300039	Mortality	Pond	8/16
8/29	300047	Spawned	Pond	8/17
8/29	300049	Mortality	Pond	8/17
8/29	300056	Mortality	L.W.	8/18
8/30	116373	Spawned	Pond	8/03
8/30	300095	Mortality	Pond	8/22
8/31	200138	Passed	Pond	8/15
8/31	200172	Mortality	Pond	8/08
8/31	300021	Mortality	Pond	8/05
8/31	300033	Mortality	Pond	8/16
8/31	300044	Mortality	Pond	8/17
8/31	300086	Mortality	Pond	8/21
8/31	300097	Mortality	L.W.	8/22
8/31	300156	Mortality	Pond	8/28
8/31	300156	Spawned	L.W.	8/28
8/31	300158	Mortality	Pond	8/28
9/01	200174	Mortality	L.W.	8/08
9/01	300016	Mortality	Pond	8/05
9/01	300034	Spawned	Pond	8/16
9/01	300101	Spawned	L.W.	8/22
9/02	200126	S.O.	Pond	8/13
9/02	200199	Spawned	Pond	8/07
9/02	300081	Spawned	Pond	8/20

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Appendix Table 2. Continued

Event Date	Tag Number	Event	Area	Tag Date
9/03	200125	S.O.	L.W.	8/13
9/03	200129	Spawned	Pond	8/14
9/03	200173	Spawned	Pond	8/08
9/03	300023	Spawned	Pond	8/06
9/03	300046	S.O.	L.W.	8/17
9/03	300050	Spawned	Pond	8/17
9/03	300074	Spawned	Pond	8/20
9/03	300133	Spawned	L.W.	8/25
9/03	300136	Spawned	Pond	8/26
9/04	116355	Spawned	Pond	8/01
9/04	116374	Spawned	Pond	8/03
9/04	200114	Spawned	Pond	8/12
9/04	300018	Spawned	Pond	8/05
9/04	300111	Spawned	Pond	8/23
9/04	300128	Spawned	L.W.	8/25
9/04	300145	Spawned	L.W.	8/26
9/05	116347	Mortality	Pond	8/01
9/05	116367	Passed	Pond	8/02
9/05	200165	Mortality	Pond	8/08
9/05	200168	Spawned	Pond	8/08
9/05	200194	Spawned	Pond	8/07
9/05	300073	Spawned	Pond	8/20
9/05	300139	Spawned	Pond	8/26
9/05	300155	Spawned	Pond	8/28
9/06	116346	Mortality	Pond	8/01
9/06	300031	Spawned	L.W.	8/06
9/06	300067	Mortality	L.W.	8/19
9/06	300077	Spawned	L.W.	8/20
9/06	300110	Spawned	L.W.	8/23
9/06	300148	Spawned	Pond	8/28

- CONTINUED -

Appendix Table 2. Continued

Event Date	Tag Number	Event	Area	Tag Date
9/07	116356	Spawned	Pond	8/01
9/07	116369	Spawned	Pond	8/03
9/07	200198	Spawned	Pond	8/07
9/07	300130	Spawned	Pond	8/25
9/08	200159	Spawned	L.W.	8/10
9/08	300019	Mortality	Pond	8/05
9/08	300045	Spawned	Pond	8/17
9/08	300082	Spawned	Pond	8/21
9/08	300157	Spawned	Pond	8/28
9/09	200110	Spawned	Pond	8/12
9/09	300038	S.O.	L.W.	8/16
9/09	300149	S.O.	L.W.	8/28
9/10	200113	S.O.	Pond	8/12
9/10	200129	Spawned	Pond	8/14
9/10	300132	S.O.	L.W.	8/25
9/11	116357	Spawned	Pond	8/02
9/12	116349	Spawned	Pond	8/01
9/12	200145	Spawned	Pond	8/09
9/13	116362	Spawned	Pond	8/02
9/13	200154	Spawned	Pond	8/10
9/13	300006	Spawned	Pond	8/04
9/13	300014	Spawned	Pond	8/05
9/13	300028	Spawned	Pond	8/06

EVENT:

Spawned = Ripe fish with tag
Mortality = Unripe mortality
S.O. = Spawned out fish
Passed = Unripe fish caught in
fish trap

AREA:

Pond = Freshwater pond
L.W. = Intertidal pond
and lower weir

Appendix Table 3. Fish Counted Through Weirs

Month	Day	L.Weir Number Counted	% of Total Run	L.Weir Number Tagged	U.Weir Number Counted
AUG	1	2,000	3.4%	10	
AUG	2	1,000	5.1%	10	
AUG	3	100	5.3%	10	
AUG	4	500	6.2%	9	
AUG	5	400	6.9%	10	
AUG	6	3,900	13.5%	10	
AUG	7	3,000	18.7%	10	
AUG	8	8,000	32.4%	12	
AUG	9	2,700	37.0%	10	
AUG	10	5,000	45.6%	10	
AUG	11	0	45.6%		500
AUG	12	4,500	53.3%	10	3,000
AUG	13	5,000	61.9%	10	2,000
AUG	14	5,000	70.4%	10	6,000
AUG	15	2,700	75.1%	6	3,000
AUG	16	2,900	80.0%	10	1,700
AUG	17	2,700	84.7%	10	2,500
AUG	18	4,000	91.5%	10	2,500
AUG	19	2,500	95.8%	10	2,500
AUG	20	100	96.0%	10	550
AUG	21	0	96.0%	10	2,450
AUG	22	100	96.1%	10	1,000
AUG	23	500	97.0%	10	
AUG	24	300	97.5%	10	
AUG	25	300	98.0%	11	
AUG	26	500	98.9%	10	
AUG	27	0	98.9%		

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Appendix Table 3.

Continued

Month	Day	L.Weir Number Counted	% of Total Run	L.Weir Number Tagged	U.Weir Number Counted
AUG	28	0	98.9%	10	
AUG	29	0	98.9%		500
AUG	30	300	99.4%		1,000
AUG	31	200	99.7%		2,000
SEPT	1	50	99.8%		1,250
SEPT	2	100	100.0%		2,500
SEPT	3		100.0%		2,800
SEPT	4		100.0%		2,700
SEPT	5		100.0%		2,600
SEPT	6		100.0%		3,000
SEPT	7		100.0%		5,000
SEPT	8		100.0%		4,000
SEPT	9		100.0%		900
SEPT	10		100.0%		230
SEPT	11		100.0%		
SEPT	12		100.0%		530
TOTALS		58,350	100.0%	258	56,710

Appendix Table 4. Tags Recovered From Spawning Fish

Event Date	Event Day	Tag Number	Tag Date	Days To Mature
9/12	255	116349	8/01	42
9/04	247	116355	8/01	34
9/07	250	116356	8/01	37
9/11	254	116357	8/02	40
9/13	256	116362	8/02	42
9/07	250	116369	8/03	35
8/30	242	116373	8/03	27
9/04	247	116374	8/03	32
9/13	256	300006	8/04	40
9/13	256	300014	8/05	39
9/04	247	300018	8/05	30
9/03	246	300023	8/06	28
9/13	256	300028	8/06	38
9/06	249	300031	8/06	31
8/26	238	200193	8/07	19
9/05	248	200194	8/07	29
9/07	250	200198	8/07	31
9/02	245	200199	8/07	26
9/05	248	200168	8/08	28
9/03	246	200173	8/08	26
9/12	255	200145	8/09	34
8/29	241	200152	8/10	19
9/13	256	200154	8/10	34
9/08	251	211059	8/10	29
8/29	241	200108	8/12	17
9/09	252	200110	8/12	28
9/04	247	200114	8/12	23

- CONTINUED -

Appendix Table 4.

Continued

Event Date	Event Day	Tag Number	Tag Date	Days To Mature
8/28	240	200116	8/12	16
9/03	246	200129	8/14	20
9/10	253	200129	8/14	27
9/01	244	300034	8/16	16
9/08	251	300045	8/17	22
8/29	241	300047	8/17	12
9/03	246	300050	8/17	17
9/05	248	300073	8/20	16
9/03	246	300074	8/20	14
9/06	249	300077	8/20	17
9/02	245	300081	8/20	13
9/08	251	300082	8/21	18
9/01	244	300101	8/22	10
9/06	249	300110	8/23	14
9/04	247	300111	8/23	12
9/04	247	300128	8/25	10
9/07	250	300130	8/25	13
9/03	246	300133	8/25	9
9/03	246	300136	8/26	8
9/05	248	300139	8/26	10
9/04	247	300145	8/26	9
9/06	249	300148	8/28	9
9/05	248	300155	8/28	8
8/31	243	300156	8/28	3
9/08	251	300157	8/28	11

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