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HANDBOOK OF BRISTOL BAY SOCKEYE SALMON MANAGEMENT

by

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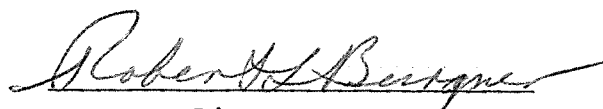
FINAL REPORT

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SUMMARIES AND RECOMMENDATIONS

SECTION I. ENTRY PATTERN, INDIVIDUAL TRIBUTARIES

Part A. Lag Time: Average Time Between Fishing Districts and Counting Tower

Summary

The method employed for analytically determining the lag time offers no advantage over the peak to peak method employed by Royce (1965). The resultant lag times are as good as can be obtained in the absence of tagging studies.

Recommendation

The data base is adequate for management purposes; no change is necessary. The method of estimation of total run size by entry pattern analysis is not sensitive enough to errors in estimation of lag time to warrant collections of more detailed lag time information for this purpose.

Part B. Occurrence of 15 Percent and 50 Percent Points of Total Run

Summary

Dates of occurrence of critical percentage points agree favorably with the only previous study.

Recommendation

The data base is adequate to this task. While the critical points are conservative enough to be of qualitative interest to managers, they are not sufficiently conservative to be of use in making daily management decisions.

Part C. Evaluation of the Relation Between Escapement and Aerial Survey Data for the Egegik River

Summary

Inability to account for variability in Egegik inside test and overall entry pattern have precluded the use of methods originally intended for this section. The supplementary tables, Section 1 are offered in lieu of this study.

Recommendation

The Egegik lagoon data should be included in the data base for historical interest. Failure at present does not bar future attempts at solution.

SECTION II. INSIDE TEST FISHING

Part A. Estimation of EscapementSummary

The inside test fishing programs in Egegik and Kvichak offer promise of being able to predict total escapement accurately, although neither program can be trusted completely.

Recommendation

The data base needs to be expanded to include all inside test sets, the times out and in; the tide stage code can be added later from a tide table which should be included in the data base. The inside test is potentially a valuable estimator of escapement which should be pursued on a research basis.

Part B. Index as Predictor of Total Run SizeSummary

The inside test fishing program has no potential as an estimator of total run size. Other estimators are available.

Recommendation

Pursue other estimators of total run size. See Section III.

SECTION III. OFFSHORE TEST FISHING

Part A. Daily Abundance EstimationSummary

For the two most recent years, 1975-1976, the Port Moller predicted inshore return provides an excellent fit to observed inshore return. Before 1975, the results are obscured by inconsistencies in the data base.

Recommendation

Put all existing raw data into the data base. For future years do not include interpolated values in the data base unless the method used to make the interpolations is documented.

Part B. Prediction of Total Inshore ReturnSummary

The offshore test fishing program at Port Moller is potentially the most accurate phase in a series of phases of estimation of total run size which starts with sampling of smolt outmigration in the bay area. As with any estimator, the accuracy of estimation is wholly dependent upon the method of sampling used to obtain the observations.

Recommendation

Every effort should be made to: 1) maintain the program from year to year; 2) preserve continuity with respect to the personnel and vessel used in the program. Whenever possible, a new vessel should be staffed with experienced personnel.

SECTION IV. OUTSIDE TEST FISHING

Parts A and BSummary

The outside test program is poorly represented in the data base at present. It is not possible to quantitatively express the value of the program at present.

Recommendation

The data collected in the outside test program should be recorded in the same detail as was recommended for the inside program. It is possible that the outside program could offer a basis for the division of the Port Moller daily total abundance into a daily district total abundance profile.

SECTION I. ENTRY PATTERN, INDIVIDUAL TRIBUTARIES

Part A. Average Time Between Fishing Districts and Counting Tower

In order to define the average lag time between the fishing district and the counting tower for past years, it is necessary to assume that the cumulative entry pattern curve would assume a sigmoid form as observed at the counting tower in the absence of fishing. It is further assumed that the curve may be reasonably well described by the model:

$$Y(t) = (1 + \exp(-(a+bt)))^{-1} \quad [1]$$

where $Y(t)$ is cumulative proportion of the run as of day of the run, t .

The procedure is to add the catch on day t to the tower count on day $t + k$, $k = 1, 2, \dots, n$, for each river in the Nushagak, Naknek-Kvichak, Egegik and Ugashik fishing districts. The resulting adjusted escapement by day is converted to proportion of the run by day to meet the form of the entry pattern model employed. Each adjusted escapement curve represents a theoretical entry pattern assuming a lag time of k days.

For each k -shifted cumulative entry pattern curve, for each river, for each year, the parameters of [1] are estimated by nonlinear regression. The entry pattern curve which has the smallest residual mean sum of squares is designated the best match of catch to escapement. The k of the best fit to the model is assumed to be the lag time for the river.

In practice, it is necessary to employ some biological insight to make the preceding method of determination of lag time effective. For example, a reasonable estimate of the lag time can be made by comparing the peak catch to the peak escapement (Royce 1965). It is then unnecessarily expensive and misleading to consider a broad range of lag times about the peak-to-peak estimate of lag time. For lag times which are unrealistically low, say 0 or 1, it is sometimes possible to obtain a good fit of the adjusted escapement curve to the model. The good fit is a mathematical artifact which can be discarded when considered along with the distance from the fishing district to the counting tower and the known behavior of the fish in migration from the estuary to the spawning grounds.

Estimates of lag time obtained by the preceding method can be used for evaluating the between years variability in lag time within a river, however, no estimate of the within season variability can be obtained in this manner. It was anticipated that the residual sum of squares could be given as a function of lag time for each year within a river, however, no consistent relation was found. In theory, the residual sum of squares should increase on either side of the mean lag time for a given river and year. In practice, the residual sum of squares often increases and decreases on either side of the mean lag time residual.

Part B. Time Variability of Occurrence of 15 Percent
and 50 Percent Point of Total Run

A cumulative daily total run size equal to or greater than 1500 fixes the first day of the run. Counting from the first day of the run, the 15 percent point of the run is the day on which the cumulative proportion of total run size is closest to 0.15. The 50 percent point is the day on which the cumulative proportion of total run size is closest to 0.50.

The tabled results (Tables 1.1-1.9) are very close to those obtained by Royce.¹

It is evident from the tables (1.1-1.9) that the dates of occurrence of the critical percentage points of the run are very conservative from year to year. The dates of occurrence are not, however, sufficiently conservative to warrant their use in daily management. Whenever a run is atypical in its run timing, such as the 1976 run, the sole reliance upon average entry pattern as observed at the counting tower or in the district (*see* supplementary tables, Section I) can lead to erroneous decisions.

The optimum system of run strength estimators, from a management point of view, will combine offshore test fishing, inside test fishing and fishing district and counting tower entry pattern in an interactive process of estimation. The offshore test fishing program (Section III) yields the first estimates of daily and total abundance. District catches combined with tower counts are used to verify and, if necessary, correct the estimates based upon observations from the offshore test program. Escapements estimates are made from observations taken in the inside test fishing program (Section II). The tower counts are used to verify and, if necessary, correct the escapement estimates from the inside test fishery. The experience expressed in the data base, 1955-1976 warns sharply against reliance on a single estimator of abundance for daily management.

The supplementary tables of this section give the yearly, total, and grand average entry pattern for a period of 20 years, 1956-1975. The total run size of the tables will differ slightly from the actual Bristol Bay annual total since the Togiak District was excluded as well as the Snake and Nushagak Rivers. There are also rounding errors involved in apportioning the catch among rivers and errors due to truncation since only catches and escapements on the open time interval, June 15-July 31 were included in the computations.

¹William F. Royce. 1965. Almanac of Bristol Bay sockeye salmon. Univ. Washington, Fish. Res. Inst., Circ. 235. 48 pp.

Part C. Evaluation of the Relation Between Escapement and
Aerial Survey Data for the Egegik River

No Egegik aerial escapement surveys are included in the data base at present. The original intent of the investigation was to describe a functional relation between the aerial escapement indices and actual escapement, however, this was abandoned in favor of a more promising approach utilizing inside test fishing indices as estimators of escapement (Section II).

The Egegik aerial escapement data should be included in the data base since past experience has shown that the quantitative utility of a survey program is not always apparent.

Table 1.1. Kvichak River, 15 percent and 50 percent points of total run at the counting tower.

Year	15 Percent Date	50 Percent Date	Lag (Days)
1956	7/10	7/15	9
1957	7/8	7/13	9
1958	7/6	7/9	4
1959	7/3	7/13	8
1960	7/7	7/13	10
1961	7/4	7/9	8
1962	7/4	7/8	5
1963	7/5	7/10	7
1964	7/8	7/13	7
1965	7/6	7/11	11
1966	7/6	7/10	8
1967	6/30	7/6	8
1968	7/1	7/6	5
1969	7/4	7/8	4
1970	7/4	7/9	10
1971	7/8	7/14	4
1972	7/7	7/10	7
1973	7/5	7/9	4
1974	7/1	7/6	9
1975	7/5	7/11	8
Mean	7/5	7/10	7.15
Variance	6.73	7.29	5.19
N	20	20	20
Minimum	6/30	7/6	4
Maximum	7/10	7/15	11

Table 1.2. Naknek River, 15 percent and 50 percent points of total run at the counting tower.

Year	15 Percent Date	50 Percent Date	Lag (Days)
1956	7/8	7/13	6
1957	7/5	7/11	7
1958	7/4	7/9	2
1959	7/4	7/10	5
1960	7/4	7/11	7
1961	7/2	7/7	4
1962	7/2	7/7	2
1963	7/2	7/7	4
1964	7/4	7/9	4
1965	7/4	7/9	8
1966	7/3	7/6	5
1967	6/27	7/3	5
1968	6/30	7/5	2
1969	7/1	7/7	2
1970	7/1	7/6	7
1971	7/7	7/13	2
1972	7/1	7/6	3
1973	7/2	7/7	2
1974	6/29	7/3	6
1975	7/4	7/9	5
Mean	7/3	7/8	4.40
Variance	6.64	7.99	4.04
N	20	20	20
Minimum	6/27	7/3	2
Maximum	7/8	7/13	7

Table 1.3. Branch River, 15 percent and 50 percent points of total run at the counting tower.

Year	15 Percent Date	50 Percent Date	Lag (Days)
1957	7/7	7/12	5
1958	7/6	7/10	8
1959	7/5	7/12	3
1960	7/4	7/10	2
1961	7/1	7/7	5
1962	7/3	7/8	6
1963	7/3	7/8	4
1964	7/2	7/8	5
1965	7/4	7/8	5
1966	7/5	7/9	7
1967	6/29	7/6	4
1968	6/30	7/6	2
1969	7/2	7/6	3
1970	7/2	7/7	3
1971	7/8	7/13	7
1972	7/3	7/8	3
1973	7/6	7/9	2
1974	7/1	7/4	6
1975	7/6	7/9	5
Mean	7/4	7/8	4.47
Variance	6.04	5.26	3.26
N	19	19	19
Minimum	6/29	7/4	2
Maximum	7/7	7/12	8

Table 1.4. Igushik River, 15 percent and 50 percent points of total run at the counting tower.

Year	15 Percent Date	50 Percent Date	Lag (Days)
1958	7/4	7/10	7
1959	7/5	7/12	6
1960	7/5	7/12	6
1961	7/2	7/9	4
1962	7/6	7/11	6
1963	7/7	7/10	5
1964	7/5	7/11	5
1965	7/3	7/11	5
1966	7/7	7/12	6
1967	7/1	7/7	8
1968	6/29	7/6	3
1969	7/4	7/10	2
1970	7/6	7/10	5
1971	7/10	7/16	5
1972	7/6	7/12	4
1973	7/1	7/9	4
1974	7/4	7/10	6
1975	7/8	7/13	5
Mean	7/5	7/11	5.11
Variance	8.73	5.09	1.99
N	18	18	18
Minimum	6/29	7/6	2
Maximum	7/10	7/16	7

Table 1.5. Snake River. Data not complete
at time of table preparation.

Table 1.6. Wood River, 15 percent and 50 percent points of total run at the counting tower.

Year	15 Percent Date	50 Percent Date	Lag (Days)
1956	7/6	7/13	6
1957	7/2	7/10	5
1958	7/2	7/8	2
1959	7/2	7/8	2
1960	7/3	7/8	2
1961	7/3	7/8	3
1962	7/4	7/8	3
1963	7/4	7/7	3
1964	7/4	7/9	3
1965	7/4	7/9	3
1966	7/2	7/9	3
1967	6/27	7/2	2
1968	6/28	7/5	4
1969	7/3	7/7	3
1970	7/4	7/9	5
1971	7/10	7/14	3
1972	7/5	7/10	3
1973	6/30	7/8	2
1974	7/2	7/7	3
1975	7/2	7/11	4
Mean	7/3	7/8	3.20
Variance	7.50	6.58	1.22
N	20	20	20
Minimum	6/27	7/2	2
Maximum	7/6	7/14	6

Table 1.7. Nuyakuk River, 15 percent and 50 percent points of total run at the counting tower.

Year	15 Percent Date	50 Percent Date	Lag (Days)
1959	7/9	7/15	10
1960	7/9	7/13	7
1961	7/8	7/12	7
1962	7/10	7/14	9
1963	7/9	7/12	7
1964	7/10	7/14	8
1965	7/9	7/15	9
1966	7/12	7/16	12
1967	7/6	7/9	11
1968	7/3	7/9	8
1969	7/10	7/13	9
1970	7/10	7/14	8
1971	7/15	7/20	7
1972	7/9	7/15	8
1973	7/10	7/15	10
1974	7/4	7/10	6
1975	7/12	7/16	8
Mean	7/9	7/14	8.47
Variance	8.11	7.62	2.51
N	17	17	17
Minimum	7/3	7/9	6
Maximum	7/15	7/20	12

Table 1.8. Egegik River, 15 percent and 50 percent points of total run at the counting tower.

Year	15 Percent Date	50 Percent Date	Lag (Days)
1956	7/13	7/17	6
1957	7/7	7/13	6
1958	7/4	7/10	7
1959	7/7	7/13	11
1960	7/7	7/13	13
1961	7/2	7/9	13
1962	7/3	7/9	12
1963	7/5	7/12	12
1964	7/5	7/11	3
1965	7/4	7/10	4
1966	7/4	7/10	6
1967	6/30	7/5	3
1968	7/1	7/6	4
1969	7/5	7/9	7
1970	7/3	7/9	6
1971	7/10	7/15	9
1972	7/5	7/9	5
1973	7/2	7/9	6
1974	7/2	7/8	7
1975	7/7	7/12	7
Mean	7/5	7/10	7.35
Variance	9.64	8.26	10.45
N	20	20	20
Minimum	6/30	7/5	3
Maximum	7/13	7/17	13

Table 1.9. Ugashik River, 15 percent and 50 percent points of total run at the counting tower.

Year	15 Percent Date	50 Percent Date	Lag (Days)
1956	7/17	7/21	8
1957	7/12	7/18	7
1958	7/6	7/13	9
1959	7/10	7/17	14
1960	7/13	7/18	12
1961	7/11	7/17	10
1962	7/10	7/16	15
1963	7/13	7/17	11
1964	7/11	7/17	5
1965	7/12	7/19	6
1966	7/11	7/6	5
1967	7/5	7/11	8
1968	7/5	7/13	7
1969	7/10	7/14	9
1970	7/10	7/16	9
1971	7/15	7/20	4
1972	7/10	7/15	10
1973	7/10	7/16	9
1974	7/12	7/14	6
1975	7/13	7/19	8
Mean	7/11	7/16	8.60
Variance	8.91	6.34	8.36
N	20	20	20
Minimum	7/5	7/11	5
Maximum	7/17	7/21	15

SECTION II. INSIDE TEST FISHING

Part A. Estimation of Escapement

The method which uses the inside test fishing index as a predictor of escapement is initially the same as the computation of the mean entry pattern curve. The daily index is first summed to produce a cumulative daily index. The cumulative daily index is converted to a proportion of the total index for the year (*see* supplementary tables). The mean curve for each is found by estimating the parameters of the model:

$$Y(t) = (1 + \exp(-(a+bt)))^{-1} \quad [1]$$

where $Y(t)$ is now cumulative proportion of the fishing index observed on day t (Table 2.1). The next step is to define what a test fishing index point is worth in terms of actual fish. The total escapement for the year is divided by the total index points to yield passage per index point or mean passage. An average of all years is taken and confidence intervals are set under normal assumptions (Tables 2.2, 2.3, 2.4):

$$(\bar{x} \pm t(\alpha, df) * S / \sqrt{n}).$$

As each daily average test fishing index accumulates, it is multiplied by the mean passage and the upper and lower confidence bounds on the mean passage to give a bounded estimate of the expected escapement (*see* example, columns 3, 4, and 5).

The average performance may be compared to the present performance by: 1) computing the projected total index for the year by dividing the escapement goal by the mean passage; 2) multiply each $Y(t)$ into the projected total index to give daily cumulative expected index (example, column 1).

If the cumulative observed index does not parallel the expected cumulative index, there are two possibilities: 1) the escapement goal is being exceeded or undercut; 2) the mean passage rate is incorrect.

At present, the answer to this dilemma rests with the fisheries manager's knowledge of the system. For example, if the upper bound of estimated escapement approaches, early on, the total run size estimate (preseason), and no indication of super abundance is seen in the fishery, the fisheries manager could infer that the mean passage rate is much too high.

In the example, beyond the dashed line, the mean passage rate and its confidence limits have been reduced by multiplying it by the ratio of the expected cumulative index to the observed cumulative index, $1086/2759.1 = .394$. The new mean and limits become 53-87-120, and the process of estimation continues as before.

This method of estimation is necessary because the mean is not always the best estimator of future performance. When it becomes obvious that the test fishing program is not performing in a typical or average fashion, the mean passage should be abandoned in favor of a figure which is more representative of the facts on hand as demonstrated in the example.

Part B. Inside Index as Predictor of Total Run Size

The inside test fishing program has no use as a predictor of total run size. The intervention of the commercial fishery is apparently a strong influence on the behavior of the index as should be expected if this index is to be of use in the estimation of escapement.

Table 2.1. Entry pattern model parameters for inside test fishing.

<u>Kvichak River</u>			<u>Egegik River</u>		
Year	A x (-1)	B	Year	A x (-1)	B
1960	4.248	0.3991	1963	3.408	0.4541
1961	2.844	0.2426	1964	7.751	0.5539
1962	4.146	0.5091	1965	5.554	0.4692
1963	4.351	0.3458	1966	4.288	0.4375
1964	8.291	0.5342	1967	3.216	0.3582
1965	6.466	0.4803	1968	5.052	0.3983
1966	4.988	0.7215	1969	4.769	0.5918
1967	5.686	0.4573	1970	9.195	0.6899
1968	3.153	0.3324	1971	5.391	0.3483
1969	7.075	0.8429	--	--	--
1970	6.368	0.6275	1976	3.588	0.2813
1971	6.187	0.4646	Mean	5.221	0.4583
1972	5.878	0.6309	S	1.927	0.1239
1973	6.811	0.5384	N	10	10
1974	--	--			
1975	3.293	0.8427			
1976	6.318	0.4850			
Mean	5.381	0.5284			
S	1.574	0.1711			
N	16	16			

Ugashik River

Year	A x (-1)	B
1961	5.018	0.4193
1962	3.914	0.3161
1963	4.193	0.3265
1964	5.542	0.3424
1965	4.866	0.2877
1966	5.919	0.4215
1967	3.869	0.7243
1968	3.994	0.2906
Mean	4.664	0.3911
S	0.791	0.1443
N	8	8

Model: $Y(t) = 1. / (1. + \exp(-(A + B * t)))$

Method: Nonlinear least squares regression.

Table 2.2. Kvichak inside test summary.

Year	Total Index	Total Escapement	Mean Passage
1960	10330	14630000	1416.26
1961	1630	3705849	2273.53
1962	9613	2580884	268.48
1963	11206	338760	30.23
1964	8289	957120	115.47
1965	16544	24325926	1470.38
1966	11683	3775184	323.13
1967	15919	3216208	202.03
1968	6122	2557440	417.74
1969	14981	8394204	560.32
1970	17677	13935306	788.33
1971	10838	2387392	220.28
1972	6788	1009962	148.79
1973	5796	226554	39.09
		4433844	
1975	28000	13140450	469.30
Total			8743.37

 $\bar{x} = 582.89$
 $S = 647.76$
 $N = 14$

L M U (95 percent)
50 583 1116

Table 2.3. Egegik inside test summary.

Year	Total Index	Total Escapement	Mean Passage
1963	7759	997602	128.57
1964	5224	849576	162.63
1965	4427	1444608	326.32
1966	8761	804246	91.80
1967	3392	636864	187.75
1968	4016	338654	84.33
1969	3460	1015554	293.51
1970	2555	919734	359.97
1971	2914	634014	217.57
1972	2652	546402	206.03
1973	4207	328842	78.16
1974	11535	1275630	110.59
1975	1880	1173840	624.38
Total			2871.61

$N = 13$

$\bar{x} = 220.857$

$S = 152.693$

L M U (95 percent)

136 221 306

Table 2.4. Ugashik inside test summary.

Year	Total Index	Total Escapement	Mean Passage
1961	11953	348639	29.17
1962	17017	255426	15.01
1963	11109	388254	34.95
1964	20204	472770	23.40
1965	22178	996612	44.94
1966	11573	704436	60.87
1967	5720	238830*	41.75
1968	35431	70896	2.00E
Total			250.09

* = Sampling stopped early.

E = Excluded from average.

\bar{x} = 35.727

S = 15.155

N = 7

L	M	U	(95 percent)
22	36	50	

Example. Egegik River, inside test 1976 as
predictor of total escapement.

	(1)	(2)	Predicted Escapement x 10 ⁰		
	Cumulative Expected Index	Cumulative Observed Index	(3) L	(4) M	(5) U
6/25	135.8	21.8	2965	4818	6671
6/26	217.2	98.3	13369	21724	30080
6/27	298.6	145.1	19734	32067	44401
6/28	380.1	471.1	64069	104113	144156
6/29	515.8	691.9	94098	152909	211721
6/30	705.9	832.0	113152	183872	254592
7/1	895.9	1509.1	205238	333511	461785
7/2	1086.0	2759.1	146232	240041	331092
7/3	1362.9	3344.9	177279	291006	401388
7/4	1601.8	3667.5	194377	319072	440100
7/5	1819.1	3927.5			
7/6	2036.2	4055.1			
7/7	2172.0	4738.5			
7/8	2307.7	6091.5			
7/9	2416.3	6562.3			
7/10	2511.4	6967.2			
7/11	2552.1	6980.4			
7/12	2606.4	7039.1			
7/13	2633.5	7039.1			
7/14	2660.7	9876.1	523433	859220	1185132
Mean Passage Base	221.0 2715.0				
		L	M	U	(95 percent)
1. Base 2715		136	221	306	
2. Base 6897		53	87	120	

SECTION III. PORT MOLLER, OFFSHORE TEST FISHING

Part A. Daily Abundance Estimation

Prior to the 1973 season, the offshore test fishery exhibited relatively high mean passage rates (Table 3.1). Since the indices of 1973, 1975, and 1976 show a relatively low mean passage rate, there is reason to suspect that something has changed in the conduct of the test fishing program between its inception and the present time.

The data base is inadequate to identify the cause for the change. Neither the net material nor the depth of the net (both constant) are specified in the reference section of the data base. In some cases, the raw data have been omitted in favor of daily averages. Interpolations for missed samples have been made and noted, however, the method of interpolation is not noted.

The importance of including as much detail as possible in the data base cannot be overestimated. The model which accurately predicted daily and total run size in 1976 and, in hindsight, 1975, assumes that the probability of capture is proportional to the density of fish; all factors known to influence the catchability of salmon by gill net gear should be incorporated into the data base.

The lag time determination is made by comparing the average date of the index for the Port Moller test fishery (supplementary tables, this section) to the average date of the total inshore return (supplementary tables, Section I). The average date is determined by numbering the days of the run and considering that the probability of occurrence of any given day is given by the proportion of index points or total run which occurs on that day:

$$\bar{t} = \sum_{i=1}^n t_i \cdot f_i \quad [1]$$

where $t_i = 1, 2, \dots, n$ days of the run and f_i is the daily proportion of the index or run occurring on day i .

The variance is given by:

$$\text{var} = \sum_{i=1}^n (t_i - \bar{t})^2 * f_i \quad [2]$$

Expressions [1] and [2] are used to compute the mean and variance of the supplementary tables of Sections I-IV.

The method used to make daily and total run size estimates is essentially similar to the method used to make escapement estimates in Section II. The method is described in computational detail in the supplementary tables.

The preliminary investigation of lag time as a function of: 1) oceanic temperature; and 2) relative abundance of 2-ocean and 3-ocean red salmon was not initiated. The stratification of the years between early and late, as previously mentioned, left only three year's data (1973, 1975, 1976) for this part of the study. The tables of the supplementary section were prepared in lieu of the investigation of the causes of variability in lag time between Port Moller and Bristol Bay.

Part B. Port Moller Index as Predictor of Total Inshore Return

The method of prediction of the total inshore return from observations taken in the Port Moller test fishery is similar to the method described for inside test fishing, Section II. The method is described in computational detail in the supplementary tables of this section.

During the 1976 season, the prediction of total run size based on the Port Moller test fishery was 11.32 million on July 1. The preliminary total run size was 11.41 million. The accuracy achieved was due to the fact that the mean passage was corrected by district catch and escapements as the season progressed. If the mean passage figure had not been changed, the Port Moller observations would have significantly overestimated the run size.

The mean curves for all years of record are characterized in Table 3.2.

Table 3.1. Port Moller test index summary.

Year	Mean Passage	Lag (Days)
1967	--*	9
1968	158630	4
1969	184017	6
1970	285684	6
1971	129773	5
1972	--*	5
1973	7140	8
--	--	--
1975	18916	6
1976	16766	8
Mean		6.33
Variance		2.75
N		9

*Many samples missing.

Expected date of mid-point, 6/28.

Lag between overall average bay run and expected date of Port Moller mid-point, 7 days.

Table 3.2. Entry pattern model parameters for offshore test fishing.

Year	A x (-1)	B
1967	3.999	0.8845
1968	4.391	0.3193
1969	4.199	0.3523
1970	4.156	0.4214
1971	4.489	0.3531
1972	2.718	0.7186
1973	3.839	0.3067
--	--	--
1975	4.637	0.2925
1976	5.452	0.3067
Mean	4.209	0.4395
S	0.728	0.2129
N	9	9

Model: $Y(t) = 1./(1. + \exp(-(A + B * t)))$.

Method: Nonlinear least squares regression.

SECTION IV. OUTSIDE TEST FISHING, INDIVIDUAL DISTRICTS,
ALL YEARS OF RECORD

Parts A and B

The outside test fishing data on file, one year, two districts, are summarized in the supplementary tables of this section. The data base is too small, at present, to be used for the analysis of the relation between the index and escapement or fishing period openings. Additional remarks are made under Summary and Recommendations at the beginning of this paper.

SECTION I. SUPPLEMENTARY TABLES

- Set 1. Bristol Bay Yearly. Estimated total run size as observed in the fishing districts, 1956-1975.
- Set 2. Bristol Bay All-year Totals. Estimated total run size summed over all years, 1956-1975.
- Set 3. Bristol Bay All-year Averages. Estimated total run size as a daily average of the years, 1956-1975.

TABLE. BRISTOL BAY YRLY.. ESTIMATED TOTAL RUN SIZE
AS OBSERVED IN THE FISHING DISTRICT, 1956. (1) MONTH
AND DAY, (2) DAILY NUMBERS, (3) CUMULATIVE NUMBERS,
(4) DAILY PROPORTION, (5) CUMULATIVE PROPORTION.
RED SALMON, BRISTOL BAY, ALASKA

DAY	(1) ***	(2) *****	(3) *****	(4) *****	(5) *****
1	615	0	0	.0000	.0000
2	616	8	8	.0000	.0000
3	617	38	46	.0000	.0000
4	618	158	204	.0000	.0000
5	619	92	296	.0000	.0000
6	620	2761	3057	.0001	.0001
7	621	3555	6612	.0002	.0003
8	622	1824	8436	.0001	.0004
9	623	1879	10315	.0001	.0005
10	624	4051	14366	.0002	.0007
11	625	60872	75238	.0029	.0035
12	626	97005	172243	.0046	.0081
13	627	16877	189120	.0008	.0089
14	628	137335	326455	.0064	.0153
15	629	256202	582657	.0120	.0273
16	630	83508	666165	.0039	.0313
17	701	207168	873333	.0097	.0410
18	702	568196	1441529	.0267	.0677
19	703	599779	2041308	.0281	.0958
20	704	422072	2463380	.0198	.1156
21	705	1041928	3505308	.0489	.1645
22	706	1447033	4952341	.0679	.2324
23	707	686806	5639147	.0322	.2647
24	708	1246451	6885598	.0585	.3231
25	709	2083037	8968635	.0978	.4209
26	710	2721197	11689832	.1277	.5486
27	711	1623333	13313165	.0762	.6248
28	712	2060333	15373498	.0967	.7215
29	713	2234097	17607595	.1048	.8263
30	714	656086	18463681	.0402	.8665
31	715	492893	18956574	.0231	.8897
32	716	713034	19669608	.0335	.9231
33	717	823240	20492848	.0386	.9618
34	718	200924	20693772	.0094	.9712
35	719	206591	20900363	.0097	.9809
36	720	163721	21064084	.0077	.9886
37	721	65948	21130032	.0031	.9917
38	722	38934	21168966	.0018	.9935
39	723	70117	21239083	.0033	.9968
40	724	60750	21299833	.0029	.9996
41	725	2124	21301957	.0001	.9997
42	726	3839	21305796	.0002	.9999
43	727	1864	21307660	.0001	1.0000

MEAN, 25.89

VARIANCE, 21.90

N, 47

TABLE. BRISTOL BAY YRLY.. ESTIMATED TOTAL RUN SIZE
 AS OBSERVED IN THE FISHING DISTRICT, 1957. (1) MONTH
 AND DAY, (2) DAILY NUMBERS, (3) CUMULATIVE NUMBERS,
 (4) DAILY PROPORTION, (5) CUMULATIVE PROPORTION.
 RED SALMON, BRISTOL BAY, ALASKA

DAY	(1) ***	(2) *****	(3) *****	(4) *****	(5) *****
1	615	0	0	.0000	.0000
2	616	0	0	.0000	.0000
3	617	0	0	.0000	.0000
4	618	0	0	.0000	.0000
5	619	7993	7993	.0008	.0008
6	620	5721	13714	.0005	.0013
7	621	4090	17804	.0004	.0017
8	622	10053	27857	.0010	.0027
9	623	56733	84590	.0054	.0081
10	624	145477	230067	.0139	.0220
11	625	145699	375766	.0139	.0359
12	626	98613	474379	.0094	.0453
13	627	438216	912595	.0419	.0872
14	628	327522	1240117	.0313	.1185
15	629	70195	1310312	.0067	.1252
16	630	61506	1371818	.0059	.1310
17	701	491906	1863724	.0470	.1780
18	702	346419	2210143	.0331	.2111
19	703	190303	2400446	.0182	.2293
20	704	1066048	3468494	.1020	.3313
21	705	936465	4404959	.0895	.4208
22	706	685407	5090366	.0655	.4862
23	707	485811	5576177	.0464	.5326
24	708	1705955	7282132	.1630	.6956
25	709	1123864	8405996	.1074	.8029
26	710	366200	8772196	.0350	.8379
27	711	417376	9189572	.0399	.8778
28	712	257436	9447008	.0246	.9024
29	713	189570	9636578	.0181	.9205
30	714	67930	9704508	.0065	.9270
31	715	224692	9929200	.0215	.9484
32	716	107790	10036990	.0103	.9587
33	717	46097	10083087	.0044	.9631
34	718	173465	10256552	.0166	.9797
35	719	47075	10303627	.0045	.9842
36	720	50149	10353776	.0048	.9890
37	721	7039	10360815	.0007	.9897
38	722	69292	10430107	.0066	.9963
39	723	11459	10441566	.0011	.9974
40	724	3685	10445251	.0004	.9977
41	725	12979	10458230	.0012	.9990
42	726	6617	10464847	.0006	.9996

MEAN, 22.26

VARIANCE, 30.35

N, 47

TABLE. BRISTOL BAY YRLY.. ESTIMATED TOTAL RUN SIZE
AS OBSERVED IN THE FISHING DISTRICT, 1958. (1) MONTH
AND DAY, (2) DAILY NUMBERS, (3) CUMULATIVE NUMBERS,
(4) DAILY PROPORTION, (5) CUMULATIVE PROPORTION.
RED SALMON, BRISTOL BAY, ALASKA

DAY	(1) ***	(2) *****	(3) *****	(4) *****	(5) *****
1	615	0	0	.0000	.0000
2	616	0	0	.0000	.0000
3	617	825	825	.0002	.0002
4	618	1365	2190	.0003	.0004
5	619	2400	4590	.0005	.0009
6	620	6776	11366	.0013	.0022
7	621	7021	18387	.0013	.0035
8	622	3623	22010	.0007	.0042
9	623	79608	101618	.0153	.0195
10	624	44515	146133	.0085	.0281
11	625	17255	163388	.0033	.0314
12	626	109942	273330	.0211	.0525
13	627	110350	383680	.0212	.0737
14	628	156177	539857	.0300	.1037
15	629	87984	627841	.0169	.1205
16	630	491550	1119391	.0944	.2149
17	701	477984	1597375	.0918	.3067
18	702	263762	1861137	.0506	.3573
19	703	676313	2537450	.1299	.4872
20	704	691438	3228888	.1328	.6200
21	705	223919	3452807	.0430	.6630
22	706	124887	3577694	.0240	.6869
23	707	464323	4042017	.0892	.7761
24	708	271531	4313548	.0521	.8282
25	709	77846	4391394	.0149	.8432
26	710	235260	4626654	.0452	.8883
27	711	168647	4795301	.0324	.9207
28	712	38751	4834052	.0074	.9282
29	713	21626	4855678	.0042	.9323
30	714	80773	4936451	.0155	.9478
31	715	30817	4967268	.0059	.9537
32	716	13166	4980434	.0025	.9563
33	717	77158	5057592	.0148	.9711
34	718	24165	5081757	.0046	.9757
35	719	11352	5093109	.0022	.9779
36	720	7599	5100708	.0015	.9794
37	721	44815	5145523	.0086	.9880
38	722	20356	5165879	.0039	.9919
39	723	2511	5168390	.0005	.9924
40	724	17780	5186170	.0034	.9958
41	725	18428	5204598	.0035	.9993
42	726	1713	5206311	.0003	.9996
43	727	1131	5207442	.0002	.9999

MEAN, 20.38

VARIANCE, 30.48

N, 47

TABLE. BRISTOL BAY YRLY., ESTIMATED TOTAL RUN SIZE AS OBSERVED IN THE FISHING DISTRICT, 1959. (1) MONTH AND DAY, (2) DAILY NUMBERS, (3) CUMULATIVE NUMBERS, (4) DAILY PROPORTION, (5) CUMULATIVE PROPORTION. RED SALMON, BRISTOL BAY, ALASKA

DAY	(1) ***	(2) *****	(3) *****	(4) *****	(5) *****
1	615	623	623	.0001	.0001
2	616	307	930	.0000	.0001
3	617	666	1596	.0001	.0001
4	618	2447	4043	.0002	.0003
5	619	2222	6265	.0002	.0005
6	620	5825	12090	.0005	.0010
7	621	4877	16967	.0004	.0014
8	622	33351	50318	.0027	.0041
9	623	46402	96720	.0038	.0079
10	624	33849	130569	.0028	.0107
11	625	170910	301479	.0140	.0246
12	626	154747	456226	.0126	.0373
13	627	111011	567237	.0091	.0463
14	628	254073	821310	.0208	.0671
15	629	486531	1307841	.0397	.1068
16	630	808129	2115970	.0660	.1728
17	701	694598	2810568	.0567	.2295
18	702	1166063	3976631	.0952	.3248
19	703	971676	4948307	.0794	.4041
20	704	497814	5446121	.0407	.4448
21	705	254083	5700204	.0208	.4656
22	706	503841	6204045	.0412	.5067
23	707	569756	6773801	.0465	.5532
24	708	827170	7600971	.0676	.6208
25	709	971044	8572015	.0793	.7001
26	710	955446	9527461	.0780	.7781
27	711	543333	10070794	.0444	.8225
28	712	187210	10258004	.0153	.8378
29	713	448952	10706956	.0367	.8745
30	714	561661	11268617	.0459	.9203
31	715	167183	11435800	.0137	.9340
32	716	215895	11651695	.0176	.9516
33	717	257290	11908985	.0210	.9726
34	718	75707	11984692	.0062	.9788
35	719	28662	12013354	.0023	.9812
36	720	43189	12056543	.0035	.9847
37	721	56122	12112665	.0046	.9893
38	722	22912	12135577	.0019	.9911
39	723	37341	12172918	.0030	.9942
40	724	45621	12218539	.0037	.9979
41	725	17392	12235931	.0014	.9993
42	726	4522	12240453	.0004	.9997
43	727	1648	12242101	.0001	.9999

MEAN, 22.26

VARIANCE, 35.52

N, 47

TABLE. BRISTOL BAY YRLY.. ESTIMATED TOTAL RUN SIZE
AS OBSERVED IN THE FISHING DISTRICT, 1960. (1) MONTH
AND DAY, (2) DAILY NUMBERS, (3) CUMULATIVE NUMBERS,
(4) DAILY PROPORTION, (5) CUMULATIVE PROPORTION.
RED SALMON, BRISTOL BAY, ALASKA

DAY	(1) ***	(2) *****	(3) *****	(4) *****	(5) *****
1	615	1799	1799	.0001	.0001
2	616	2139	3938	.0001	.0001
3	617	1995	5933	.0001	.0002
4	618	987	6920	.0000	.0002
5	619	150	7070	.0000	.0002
6	620	48489	55559	.0014	.0016
7	621	79812	135371	.0022	.0038
8	622	80074	215445	.0022	.0060
9	623	89685	305130	.0025	.0086
10	624	98917	404047	.0028	.0113
11	625	197996	602043	.0056	.0169
12	626	237678	839721	.0067	.0236
13	627	847111	1686832	.0238	.0473
14	628	729992	2416824	.0205	.0678
15	629	502338	2919162	.0141	.0819
16	630	1809443	4728605	.0508	.1327
17	701	1425163	6153768	.0400	.1727
18	702	1418618	7572386	.0398	.2125
19	703	2497934	9070320	.0420	.2545
20	704	3432565	12502885	.0963	.3508
21	705	3070022	15572907	.0861	.4369
22	706	3045588	18618495	.0855	.5224
23	707	2357789	20976284	.0662	.5885
24	708	1975994	22952278	.0554	.6440
25	709	2180112	25132390	.0612	.7052
26	710	2149359	27281749	.0603	.7655
27	711	2100360	29382109	.0589	.8244
28	712	1771295	31153404	.0497	.8741
29	713	1271501	32424905	.0357	.9098
30	714	746294	33171199	.0209	.9307
31	715	592904	33764103	.0166	.9473
32	716	591185	34355288	.0166	.9639
33	717	563308	34918596	.0158	.9797
34	718	119050	35037646	.0033	.9831
35	719	118542	35156188	.0033	.9864
36	720	99300	35255488	.0028	.9892
37	721	101726	35357214	.0029	.9920
38	722	99672	35456886	.0028	.9948
39	723	85185	35542071	.0024	.9972
40	724	81584	35623655	.0023	.9995
41	725	7353	35631008	.0002	.9997
42	726	6648	35637656	.0002	.9999
43	727	2798	35640454	.0001	1.0000

MEAN, 22.57

VARIANCE, 29.09

N, 47

TABLE. BRISTOL BAY YRLY.. ESTIMATED TOTAL RUN SIZE
AS OBSERVED IN THE FISHING DISTRICT, 1961. (1) MONTH
AND DAY, (2) DAILY NUMBERS, (3) CUMULATIVE NUMBERS,
(4) DAILY PROPORTION, (5) CUMULATIVE PROPORTION.
RED SALMON, BRISTOL BAY, ALASKA

DAY	(1) ***	(2) *****	(3) *****	(4) *****	(5) *****
1	615	2865	2865	.0002	.0002
2	616	2865	5730	.0002	.0003
3	617	1149	6879	.0001	.0004
4	618	456	7335	.0000	.0004
5	619	70947	78282	.0043	.0047
6	620	159232	237514	.0096	.0143
7	621	196870	434384	.0119	.0262
8	622	254356	688740	.0153	.0415
9	623	246889	935629	.0149	.0564
10	624	135326	1070955	.0082	.0646
11	625	67521	1138476	.0041	.0686
12	626	1072496	2210972	.0646	.1333
13	627	703417	2914389	.0424	.1757
14	628	862083	3776472	.0520	.2276
15	629	847221	4623693	.0511	.2787
16	630	1291963	5915656	.0779	.3566
17	701	1669144	7584800	.1006	.4572
18	702	937959	8522759	.0565	.5137
19	703	1367754	9890513	.0824	.5961
20	704	1165387	11055900	.0702	.6664
21	705	1028790	12084690	.0620	.7284
22	706	951474	13036164	.0573	.7857
23	707	891771	13927935	.0538	.8395
24	708	735911	14663846	.0444	.8839
25	709	446240	15110086	.0269	.9108
26	710	340516	15450602	.0205	.9313
27	711	375046	15825648	.0226	.9539
28	712	96779	15922427	.0058	.9597
29	713	152738	16075165	.0092	.9689
30	714	127238	16202403	.0077	.9766
31	715	99984	16302387	.0060	.9826
32	716	18266	16320653	.0011	.9837
33	717	40737	16361390	.0025	.9862
34	718	51169	16412559	.0031	.9893
35	719	47713	16460272	.0029	.9921
36	720	47635	16507907	.0029	.9950
37	721	47809	16555716	.0029	.9979
38	722	19288	16575004	.0012	.9991
39	723	1422	16576426	.0001	.9991
40	724	5758	16582184	.0003	.9995
41	725	2928	16585112	.0002	.9997
42	726	3066	16588178	.0002	.9998
43	727	2049	16590227	.0001	1.0000

MEAN, 18.45

VARIANCE, 30.39

N, 47

TABLE. BRISTOL BAY YRLY.. ESTIMATED TOTAL RUN SIZE
AS OBSERVED IN THE FISHING DISTRICT, 1962. (1) MONTH
AND DAY, (2) DAILY NUMBERS, (3) CUMULATIVE NUMBERS,
(4) DAILY PROPORTION, (5) CUMULATIVE PROPORTION.
RED SALMON, BRISTOL BAY, ALASKA

DAY	(1) ***	(2) *****	(3) *****	(4) *****	(5) *****
1	615	659	659	.0001	.0001
2	616	514	1173	.0001	.0001
3	617	708	1881	.0001	.0002
4	618	12264	14145	.0012	.0014
5	619	20111	34256	.0020	.0035
6	620	25175	59431	.0025	.0060
7	621	24941	84372	.0025	.0085
8	622	29885	114257	.0030	.0115
9	623	16355	130612	.0017	.0132
10	624	60978	191590	.0062	.0193
11	625	444544	636134	.0449	.0642
12	626	358343	994477	.0362	.1004
13	627	112008	1106485	.0113	.1117
14	628	161885	1268370	.0163	.1280
15	629	356346	1624716	.0360	.1640
16	630	1102931	2727647	.1113	.2753
17	701	1039587	3767234	.1049	.3802
18	702	1404272	5171506	.1417	.5220
19	703	1034317	6205823	.1044	.6264
20	704	340573	6546396	.0344	.6607
21	705	734574	7280970	.0741	.7349
22	706	304789	7585759	.0308	.7656
23	707	520827	8106586	.0526	.8182
24	708	184371	8290957	.0186	.8368
25	709	264800	8555757	.0267	.8635
26	710	217490	8773247	.0220	.8855
27	711	172179	8945426	.0174	.9029
28	712	187734	9133160	.0189	.9218
29	713	174051	9307211	.0176	.9394
30	714	164409	9471620	.0166	.9560
31	715	160731	9632351	.0162	.9722
32	716	40932	9673283	.0041	.9763
33	717	43044	9716327	.0043	.9807
34	718	47310	9763637	.0048	.9855
35	719	49102	9812739	.0050	.9904
36	720	50470	9863209	.0051	.9955
37	721	19703	9882912	.0020	.9975
38	722	1698	9884610	.0002	.9977
39	723	3294	9887904	.0003	.9980
40	724	4572	9892476	.0005	.9985
41	725	4604	9897080	.0005	.9989
42	726	6410	9903490	.0006	.9996
43	727	3295	9906785	.0003	.9999

MEAN, 19.39

VARIANCE, 29.93

N, 47

TABLE. BRISTOL BAY YRLY.. ESTIMATED TOTAL RUN SIZE
AS OBSERVED IN THE FISHING DISTRICT, 1963. (1) MONTH
AND DAY, (2) DAILY NUMBERS, (3) CUMULATIVE NUMBERS,
(4) DAILY PROPORTION, (5) CUMULATIVE PROPORTION.
RED SALMON, BRISTOL BAY, ALASKA

DAY	(1) ***	(2) *****	(3) *****	(4) *****	(5) *****
1	615	143	143	.0000	.0000
2	616	72	215	.0000	.0000
3	617	17162	17377	.0026	.0027
4	618	27333	44710	.0042	.0068
5	619	27351	72061	.0042	.0110
6	620	28053	100114	.0043	.0153
7	621	29739	129853	.0046	.0199
8	622	13219	143072	.0020	.0219
9	623	8124	151196	.0012	.0232
10	624	63400	214596	.0097	.0329
11	625	100304	314900	.0154	.0482
12	626	51314	366214	.0079	.0561
13	627	112629	478843	.0173	.0734
14	628	108313	587156	.0166	.0900
15	629	457951	1045107	.0702	.1601
16	630	184134	1229241	.0282	.1883
17	701	422119	1651360	.0647	.2530
18	702	513269	2164629	.0786	.3316
19	703	1077431	3242060	.1651	.4967
20	704	239411	3481471	.0367	.5334
21	705	386776	3868247	.0593	.5926
22	706	619287	4487534	.0949	.6875
23	707	522822	5010356	.0801	.7676
24	708	427730	5438086	.0655	.8331
25	709	155601	5593687	.0238	.8570
26	710	203846	5797533	.0312	.8882
27	711	166782	5964315	.0256	.9137
28	712	104849	6069164	.0161	.9298
29	713	65225	6134389	.0100	.9398
30	714	69105	6203494	.0106	.9504
31	715	55635	6259129	.0085	.9589
32	716	52689	6311818	.0081	.9670
33	717	33898	6345716	.0052	.9722
34	718	43032	6388748	.0066	.9788
35	719	45952	6434700	.0070	.9858
36	720	25631	6460331	.0039	.9897
37	721	35885	6496216	.0055	.9952
38	722	9956	6506172	.0015	.9968
39	723	8636	6514808	.0013	.9981
40	724	5406	6520214	.0008	.9989
41	725	3037	6523251	.0005	.9994
42	726	2917	6526168	.0004	.9996

MEAN, 20.44

VARIANCE, 30.52

N, 47

TABLE. BRISTOL BAY YRLY.. ESTIMATED TOTAL RUN SIZE
AS OBSERVED IN THE FISHING DISTRICT, 1964. (1) MONTH
AND DAY, (2) DAILY NUMBERS, (3) CUMULATIVE NUMBERS,
(4) DAILY PROPORTION, (5) CUMULATIVE PROPORTION.
RED SALMON, BRISTOL BAY, ALASKA

DAY	(1) ***	(2) *****	(3) *****	(4) *****	(5) *****
1	615	3854	3854	.0004	.0004
2	616	6167	10021	.0006	.0009
3	617	6209	16230	.0006	.0015
4	618	6731	22961	.0006	.0021
5	619	7127	30088	.0007	.0028
6	620	4490	34578	.0004	.0032
7	621	2286	36864	.0002	.0034
8	622	37044	73908	.0034	.0068
9	623	32169	106077	.0030	.0097
10	624	11124	117201	.0010	.0108
11	625	244874	362075	.0225	.0332
12	626	256750	618825	.0236	.0568
13	627	29004	647829	.0027	.0595
14	628	27552	675381	.0025	.0620
15	629	289231	964612	.0266	.0886
16	630	320457	1285069	.0294	.1180
17	701	375480	1660549	.0345	.1525
18	702	1147564	2808113	.1054	.2578
19	703	1131578	3939691	.1039	.3617
20	704	504774	4444465	.0463	.4080
21	705	303420	4747885	.0279	.4359
22	706	1444444	6192329	.1326	.5685
23	707	1133831	7326160	.1041	.6726
24	708	1167538	8493698	.1072	.7798
25	709	463752	8957450	.0426	.8224
26	710	815148	9772598	.0748	.8972
27	711	179904	9952502	.0165	.9137
28	712	153143	10105645	.0141	.9278
29	713	93442	10199087	.0086	.9364
30	714	100392	10299479	.0092	.9456
31	715	98380	10397859	.0090	.9546
32	716	81724	10479583	.0075	.9621
33	717	136049	10615632	.0125	.9746
34	718	82756	10698388	.0076	.9822
35	719	63328	10761716	.0058	.9880
36	720	29921	10791637	.0027	.9908
37	721	23545	10815182	.0022	.9929
38	722	23665	10838847	.0022	.9951
39	723	17757	10856604	.0016	.9967
40	724	16563	10873167	.0015	.9982
41	725	7357	10880524	.0007	.9989
42	726	3906	10884430	.0004	.9993
43	727	5434	10889864	.0005	.9998

MEAN, 21.63

VARIANCE, 26.19

N, 47

TABLE. BRISTOL BAY YRLY.. ESTIMATED TOTAL RUN SIZE
AS OBSERVED IN THE FISHING DISTRICT, 1965. (1) MONTH
AND DAY, (2) DAILY NUMBERS, (3) CUMULATIVE NUMBERS,
(4) DAILY PROPORTION, (5) CUMULATIVE PROPORTION.
RED SALMON, BRISTOL BAY, ALASKA

DAY	(1) ***	(2) *****	(3) *****	(4) *****	(5) *****
1	615	807	807	.0000	.0000
2	616	813	1620	.0000	.0000
3	617	1101	2721	.0000	.0001
4	618	8331	11052	.0002	.0002
5	619	40343	51395	.0008	.0010
6	620	67164	118559	.0013	.0024
7	621	143645	262204	.0028	.0052
8	622	201069	463273	.0040	.0092
9	623	230965	694238	.0046	.0138
10	624	325741	1019979	.0065	.0202
11	625	554743	1574722	.0110	.0312
12	626	646517	2221239	.0128	.0441
13	627	1540339	3761578	.0306	.0746
14	628	2086089	5849667	.0414	.1160
15	629	1498666	7348333	.0297	.1457
16	630	2764153	10112486	.0548	.2006
17	701	4011260	14123746	.0796	.2801
18	702	2840980	16964726	.0563	.3365
19	703	2836140	19800866	.0563	.3927
20	704	4119824	23920690	.0817	.4744
21	705	2564401	26485091	.0509	.5253
22	706	3401308	29886399	.0675	.5928
23	707	2104141	31990540	.0417	.6345
24	708	2779058	34769598	.0551	.6896
25	709	1800633	36570231	.0357	.7253
26	710	1520806	38091037	.0302	.7555
27	711	2304503	40395540	.0457	.8012
28	712	1923444	42318984	.0381	.8393
29	713	1718904	44037888	.0341	.8734
30	714	1491684	45529572	.0296	.9030
31	715	1218609	46748181	.0242	.9272
32	716	863532	47611713	.0171	.9443
33	717	784782	48396495	.0156	.9599
34	718	781734	49178229	.0155	.9754
35	719	774567	49952796	.0154	.9907
36	720	162147	50114943	.0032	.9940
37	721	114801	50229744	.0023	.9962
38	722	92931	50322675	.0018	.9981
39	723	66054	50388729	.0013	.9994
40	724	26904	50415633	.0005	.9999
41	725	660	50416293	.0000	.9999
42	726	1343	50417636	.0000	1.0000
43	727	1679	50419315	.0000	1.0000

MEAN, 21.73

VARIANCE, 38.37

N, 47

TABLE. BRISTOL BAY YRLY.. ESTIMATED TOTAL RUN SIZE AS OBSERVED IN THE FISHING DISTRICT, 1966. (1) MONTH AND DAY, (2) DAILY NUMBERS, (3) CUMULATIVE NUMBERS, (4) DAILY PROPORTION, (5) CUMULATIVE PROPORTION. RED SALMON, BRISTOL BAY, ALASKA

DAY	(1) ***	(2) *****	(3) *****	(4) *****	(5) *****
1	615	840	840	.0000	.0000
2	616	864	1704	.0000	.0001
3	617	1086	2790	.0001	.0002
4	618	446	3236	.0000	.0002
5	619	78	3314	.0000	.0002
6	620	21485	24799	.0012	.0014
7	621	36919	61718	.0021	.0035
8	622	15520	77238	.0009	.0044
9	623	68297	145535	.0039	.0082
10	624	128863	274398	.0073	.0155
11	625	118122	392520	.0067	.0222
12	626	128925	521445	.0073	.0295
13	627	106872	628317	.0060	.0355
14	628	977860	1606177	.0553	.0908
15	629	402161	2008338	.0227	.1135
16	630	648816	2657154	.0367	.1502
17	701	1502312	4159466	.0849	.2350
18	702	3052317	7211783	.1725	.4075
19	703	2356607	9568390	.1332	.5407
20	704	953130	10521520	.0539	.5946
21	705	1077747	11599267	.0609	.6555
22	706	1515088	13114355	.0856	.7411
23	707	1345511	14459866	.0760	.8171
24	708	1002527	15462393	.0567	.8738
25	709	540354	16002747	.0305	.9043
26	710	178315	16181062	.0101	.9144
27	711	382978	16564040	.0216	.9360
28	712	491672	17055712	.0278	.9638
29	713	166487	17222199	.0094	.9732
30	714	117767	17339966	.0067	.9799
31	715	123578	17463544	.0070	.9868
32	716	82385	17545929	.0047	.9915
33	717	11454	17557383	.0006	.9921
34	718	21923	17579306	.0012	.9934
35	719	28916	17608222	.0016	.9950
36	720	26768	17634990	.0015	.9965
37	721	24458	17659448	.0014	.9979
38	722	24338	17683786	.0014	.9993
39	723	7279	17691065	.0004	.9997
40	724	0	17691065	.0000	.9997
41	725	1831	17692896	.0001	.9998
42	726	2575	17695471	.0001	1.0000
43	727	88	17695559	.0000	1.0000

MEAN, 20.04

VARIANCE, 19.15

N, 47

TABLE. BRISTOL BAY YRLY.. ESTIMATED TOTAL RUN SIZE
AS OBSERVED IN THE FISHING DISTRICT, 1967. (1) MONTH
AND DAY, (2) DAILY NUMBERS, (3) CUMULATIVE NUMBERS,
(4) DAILY PROPORTION, (5) CUMULATIVE PROPORTION.
RED SALMON, BRISTOL BAY, ALASKA

DAY	(1) ***	(2) *****	(3) *****	(4) *****	(5) *****
1	615	7947	7947	.0004	.0004
2	616	9183	17130	.0005	.0009
3	617	22764	39894	.0012	.0022
4	618	17274	57168	.0009	.0031
5	619	241138	298306	.0130	.0161
6	620	450002	748308	.0243	.0404
7	621	417752	1166060	.0226	.0630
8	622	236366	1402426	.0128	.0757
9	623	310116	1712542	.0167	.0925
10	624	1253276	2965818	.0677	.1602
11	625	1686039	4651857	.0911	.2512
12	626	271560	4923417	.0147	.2659
13	627	382080	5305497	.0206	.2865
14	628	1147942	6453439	.0620	.3485
15	629	6628844	13082283	.3580	.7065
16	630	366288	13448571	.0198	.7263
17	701	486214	13936785	.0264	.7526
18	702	417444	14354229	.0225	.7752
19	703	823316	15177545	.0445	.8196
20	704	1253299	16430844	.0677	.8873
21	705	597762	17028606	.0323	.9196
22	706	149256	17177862	.0081	.9277
23	707	174798	17352660	.0094	.9371
24	708	326699	17679359	.0176	.9547
25	709	103366	17782725	.0056	.9603
26	710	74224	17856949	.0040	.9643
27	711	54460	17911409	.0029	.9673
28	712	160477	18071886	.0087	.9759
29	713	144989	18216875	.0078	.9838
30	714	34214	18251089	.0018	.9856
31	715	26540	18277629	.0014	.9870
32	716	21368	18298997	.0012	.9882
33	717	31936	18330933	.0017	.9899
34	718	40266	18371199	.0022	.9921
35	719	40194	18411393	.0022	.9943
36	720	44502	18455895	.0024	.9967
37	721	38316	18494211	.0021	.9987
38	722	14104	18508315	.0008	.9995
39	723	372	18508687	.0000	.9995
40	724	2224	18510911	.0001	.9996
41	725	1924	18512835	.0001	.9997
42	726	1924	18514759	.0001	.9999
43	727	1594	18516353	.0001	.9999

MEAN, 15.20

VARIANCE, 26.72

N, 47

TABLE. BRISTOL BAY YRLY.. ESTIMATED TOTAL RUN SIZE
AS OBSERVED IN THE FISHING DISTRICT, 1968. (1) MONTH
AND DAY, (2) DAILY NUMBERS, (3) CUMULATIVE NUMBERS,
(4) DAILY PROPORTION, (5) CUMULATIVE PROPORTION.
RED SALMON, BRISTOL BAY, ALASKA

DAY	(1) ***	(2) *****	(3) *****	(4) *****	(5) *****
1	615	561	561	.0001	.0001
2	616	918	1479	.0001	.0002
3	617	4863	6342	.0006	.0008
4	618	12413	18755	.0015	.0022
5	619	9654	28409	.0011	.0034
6	620	8426	36835	.0010	.0044
7	621	56569	93404	.0067	.0110
8	622	166818	260222	.0197	.0308
9	623	213006	473228	.0252	.0560
10	624	435752	908980	.0515	.1075
11	625	387224	1296204	.0458	.1533
12	626	368031	1664235	.0435	.1968
13	627	801245	2465480	.0948	.2916
14	628	519207	2984687	.0614	.3530
15	629	757026	3741713	.0895	.4426
16	630	1004489	4746202	.1188	.5614
17	701	525022	5271224	.0621	.6235
18	702	605129	5876353	.0716	.6950
19	703	242772	6119125	.0287	.7238
20	704	419838	6538963	.0497	.7734
21	705	433656	6972619	.0513	.8247
22	706	415261	7387880	.0491	.8736
23	707	324186	7712066	.0383	.9122
24	708	143944	7856010	.0170	.9292
25	709	129121	7985131	.0153	.9445
26	710	119833	8104964	.0142	.9586
27	711	116167	8221131	.0137	.9724
28	712	86167	8307298	.0102	.9826
29	713	37733	8345031	.0045	.9870
30	714	8340	8353371	.0010	.9880
31	715	19037	8372408	.0023	.9903
32	716	17088	8389496	.0020	.9923
33	717	9914	8399410	.0012	.9935
34	718	12549	8411959	.0015	.9950
35	719	13531	8425490	.0016	.9966
36	720	5713	8431203	.0007	.9972
37	721	2615	8433818	.0003	.9975
38	722	4492	8438310	.0005	.9981
39	723	4337	8442647	.0005	.9986
40	724	4192	8446839	.0005	.9991
41	725	2578	8449417	.0003	.9994
42	726	2578	8451995	.0003	.9997
43	727	1484	8453479	.0002	.9999

MEAN, 16.64

VARIANCE, 26.52

N, 47

TABLE. BRISTOL BAY YRLY., ESTIMATED TOTAL RUN SIZE AS OBSERVED IN THE FISHING DISTRICT, 1969. (1) MONTH AND DAY, (2) DAILY NUMBERS, (3) CUMULATIVE NUMBERS, (4) DAILY PROPORTION, (5) CUMULATIVE PROPORTION. RED SALMON, BRISTOL BAY, ALASKA

DAY	(1) ***	(2) *****	(3) *****	(4) *****	(5) *****
1	615	77	77	.0000	.0000
2	616	712	789	.0000	.0000
3	617	714	1503	.0000	.0001
4	618	869	2372	.0000	.0001
5	619	964	3336	.0000	.0002
6	620	1409	4745	.0001	.0002
7	621	3830	8575	.0002	.0004
8	622	11570	20145	.0006	.0010
9	623	108844	128989	.0054	.0064
10	624	287339	416328	.0143	.0207
11	625	461920	678248	.0230	.0437
12	626	554566	1432814	.0276	.0713
13	627	961877	2394691	.0478	.1191
14	628	952172	3346863	.0474	.1665
15	629	1761273	5108136	.0876	.2541
16	630	1286454	6394590	.0640	.3181
17	701	1614447	8009037	.0803	.3984
18	702	1218323	9227360	.0606	.4590
19	703	2142783	11370143	.1066	.5656
20	704	2178293	13548436	.1084	.6739
21	705	971507	14519943	.0483	.7222
22	706	1020704	15540647	.0508	.7730
23	707	809015	16349662	.0402	.8133
24	708	721414	17071076	.0359	.8491
25	709	628170	17699246	.0312	.8804
26	710	538957	18238203	.0268	.9072
27	711	470803	18709006	.0234	.9306
28	712	409739	19118745	.0204	.9510
29	713	388692	19507437	.0193	.9703
30	714	125214	19632651	.0062	.9766
31	715	113304	19745955	.0056	.9822
32	716	88306	19834261	.0044	.9866
33	717	82888	19917149	.0041	.9907
34	718	79498	19996647	.0040	.9947
35	719	75858	20072505	.0038	.9984
36	720	6066	20078571	.0003	.9987
37	721	6944	20085515	.0003	.9991
38	722	6194	20091709	.0003	.9994
39	723	5178	20096887	.0003	.9997
40	724	4528	20101415	.0002	.9999
41	725	1703	20103118	.0001	1.0000
42	726	729	20103847	.0000	1.0000
43	727	0	20103847	.0000	1.0000

MEAN, 19.18

VARIANCE, 25.27

N, 47

TABLE. BRISTOL BAY YRLY.. ESTIMATED TOTAL RUN SIZE
AS OBSERVED IN THE FISHING DISTRICT, 1970. (1) MONTH
AND DAY, (2) DAILY NUMBERS, (3) CUMULATIVE NUMBERS,
(4) DAILY PROPORTION, (5) CUMULATIVE PROPORTION.
RED SALMON, BRISTOL BAY, ALASKA

DAY	(1) ***	(2) *****	(3) *****	(4) *****	(5) *****
1	615	14738	14738	.0004	.0004
2	616	13740	28478	.0003	.0007
3	617	22219	50697	.0005	.0013
4	618	24739	75436	.0006	.0019
5	619	18626	94062	.0005	.0023
6	620	28772	122834	.0007	.0030
7	621	118132	240966	.0029	.0060
8	622	259708	500674	.0064	.0124
9	623	560424	1061098	.0139	.0263
10	624	839174	1900272	.0208	.0470
11	625	1064251	2964523	.0263	.0734
12	626	1241531	4206054	.0307	.1041
13	627	2448738	6654792	.0606	.1647
14	628	2782149	9436941	.0688	.2335
15	629	2862557	12299498	.0708	.3044
16	630	2155606	14455104	.0533	.3577
17	701	2642107	17097211	.0654	.4231
18	702	2985847	20083058	.0739	.4970
19	703	2895120	22978178	.0716	.5686
20	704	3238863	26217041	.0801	.6488
21	705	3143199	29360240	.0778	.7265
22	706	1619522	30979762	.0401	.7666
23	707	2171155	33150917	.0537	.8203
24	708	1630934	34781851	.0404	.8607
25	709	1349677	36131528	.0334	.8941
26	710	1501275	37632803	.0372	.9313
27	711	552241	38185044	.0137	.9449
28	712	685243	38870287	.0170	.9619
29	713	324694	39194981	.0080	.9699
30	714	212866	39407847	.0053	.9752
31	715	199316	39607163	.0049	.9801
32	716	181706	39788869	.0045	.9846
33	717	198913	39987782	.0049	.9895
34	718	182818	40170600	.0045	.9940
35	719	79868	40250468	.0020	.9960
36	720	30000	40280468	.0007	.9968
37	721	29004	40309472	.0007	.9975
38	722	33032	40342504	.0008	.9983
39	723	31778	40374282	.0008	.9991
40	724	26483	40400765	.0007	.9997
41	725	8493	40409258	.0002	1.0000
42	726	1114	40410372	.0000	1.0000
43	727	436	40410808	.0000	1.0000

MEAN, 18.74

VARIANCE, 28.71

N, 47

TABLE. BRISTOL BAY YRLY.. ESTIMATED TOTAL RUN SIZE
AS OBSERVED IN THE FISHING DISTRICT, 1971. (1) MONTH
AND DAY, (2) DAILY NUMBERS, (3) CUMULATIVE NUMBERS,
(4) DAILY PROPORTION, (5) CUMULATIVE PROPORTION.
RED SALMON, BRISTOL BAY, ALASKA

DAY	(1) ***	(2) *****	(3) *****	(4) *****	(5) *****
1	615	0	0	.0000	.0000
2	616	1	1	.0000	.0000
3	617	3	4	.0000	.0000
4	618	3	7	.0000	.0000
5	619	1	8	.0000	.0000
6	620	60	68	.0000	.0000
7	621	5715	5783	.0004	.0004
8	622	8721	14504	.0005	.0009
9	623	3371	17875	.0002	.0011
10	624	40855	58730	.0026	.0037
11	625	83758	142488	.0052	.0089
12	626	51342	193830	.0032	.0121
13	627	61942	255772	.0039	.0160
14	628	68632	324404	.0043	.0203
15	629	201151	525555	.0126	.0328
16	630	412370	937925	.0258	.0586
17	701	222526	1160451	.0139	.0725
18	702	478461	1638912	.0299	.1024
19	703	310868	1949780	.0194	.1218
20	704	1170476	3120256	.0731	.1949
21	705	1042532	4162788	.0651	.2601
22	706	549647	4712435	.0343	.2944
23	707	711611	5424046	.0445	.3389
24	708	1490143	6914189	.0931	.4320
25	709	931104	7845293	.0582	.4901
26	710	798996	8644289	.0499	.5401
27	711	1585976	10230265	.0991	.6392
28	712	1085552	11315817	.0678	.7070
29	713	950169	12265986	.0594	.7663
30	714	794649	13060635	.0496	.8160
31	715	714924	13775559	.0447	.8607
32	716	745283	14520842	.0466	.9072
33	717	626289	15147131	.0391	.9463
34	718	364045	15511176	.0227	.9691
35	719	222396	15733572	.0139	.9830
36	720	83340	15816912	.0052	.9882
37	721	43080	15859992	.0027	.9909
38	722	22626	15882618	.0014	.9923
39	723	13020	15895638	.0008	.9931
40	724	72959	15968597	.0046	.9977
41	725	32841	16001438	.0021	.9997
42	726	2561	16003999	.0002	.9999
43	727	1450	16005449	.0001	1.0000

MEAN, 25.44

VARIANCE, 29.13

N, 47

TABLE. BRISTOL BAY YRLY., ESTIMATED TOTAL RUN SIZE AS OBSERVED IN THE FISHING DISTRICT, 1972. (1) MONTH AND DAY, (2) DAILY NUMBERS, (3) CUMULATIVE NUMBERS, (4) DAILY PROPORTION, (5) CUMULATIVE PROPORTION. RED SALMON, BRISTOL BAY, ALASKA

DAY	(1) ***	(2) *****	(3) *****	(4) *****	(5) *****
1	615	0	0	.0000	.0000
2	616	0	0	.0000	.0000
3	617	0	0	.0000	.0000
4	618	18	18	.0000	.0000
5	619	0	18	.0000	.0000
6	620	12	30	.0000	.0000
7	621	0	30	.0000	.0000
8	622	1131	1161	.0002	.0002
9	623	3657	4818	.0007	.0009
10	624	23485	28303	.0044	.0054
11	625	69725	98028	.0132	.0186
12	626	82585	180613	.0156	.0342
13	627	89093	269706	.0169	.0511
14	628	336422	606128	.0637	.1148
15	629	315538	921666	.0598	.1746
16	630	276755	1198421	.0524	.2271
17	701	587320	1785741	.1113	.3384
18	702	741634	2527375	.1405	.4789
19	703	513731	3041106	.0973	.5762
20	704	519609	3560715	.0985	.6747
21	705	193848	3754563	.0367	.7114
22	706	200212	3954775	.0379	.7493
23	707	404262	4359037	.0766	.8259
24	708	259531	4618568	.0492	.8751
25	709	96283	4714851	.0182	.8934
26	710	339639	5054490	.0644	.9577
27	711	36834	5091324	.0070	.9647
28	712	29028	5120352	.0055	.9702
29	713	22188	5142540	.0042	.9744
30	714	19686	5162226	.0037	.9781
31	715	15744	5177970	.0030	.9811
32	716	11512	5189482	.0022	.9833
33	717	12753	5202235	.0024	.9857
34	718	17130	5219365	.0032	.9889
35	719	16980	5236345	.0032	.9922
36	720	16368	5252713	.0031	.9953
37	721	16242	5268955	.0031	.9983
38	722	6128	5275083	.0012	.9995
39	723	54	5275137	.0000	.9995
40	724	540	5275677	.0001	.9996
41	725	610	5276287	.0001	.9997
42	726	610	5276897	.0001	.9998
43	727	541	5277438	.0001	1.0000

MEAN, 19.48

VARIANCE, 20.06

N, 47

TABLE. BRISTOL BAY YRLY.. ESTIMATED TOTAL RUN SIZE
AS OBSERVED IN THE FISHING DISTRICT, 1973. (1) MONTH
AND DAY, (2) DAILY NUMBERS, (3) CUMULATIVE NUMBERS,
(4) DAILY PROPORTION, (5) CUMULATIVE PROPORTION.
RED SALMON, BRISTOL BAY, ALASKA

DAY	(1) ***	(2) *****	(3) *****	(4) *****	(5) *****
1	615	515	515	.0002	.0002
2	616	193	708	.0001	.0003
3	617	213	921	.0001	.0004
4	618	5617	6538	.0027	.0031
5	619	8444	14982	.0040	.0071
6	620	8612	23594	.0041	.0112
7	621	13288	36882	.0063	.0176
8	622	17703	54585	.0084	.0260
9	623	19373	73958	.0092	.0352
10	624	28074	102032	.0134	.0486
11	625	17604	119636	.0084	.0570
12	626	38455	158091	.0183	.0753
13	627	114666	272757	.0546	.1299
14	628	74097	346854	.0353	.1653
15	629	41002	387856	.0195	.1848
16	630	106382	494238	.0507	.2355
17	701	66162	560400	.0315	.2670
18	702	233564	793964	.1113	.3783
19	703	297770	1091734	.1419	.5201
20	704	123706	1215440	.0589	.5791
21	705	224811	1440251	.1071	.6862
22	706	169325	1609576	.0807	.7668
23	707	126324	1735900	.0602	.8270
24	708	69638	1805538	.0332	.8602
25	709	52944	1858482	.0252	.8854
26	710	50440	1908922	.0240	.9095
27	711	22242	1931164	.0106	.9201
28	712	21246	1952410	.0101	.9302
29	713	14754	1967164	.0070	.9372
30	714	13296	1980460	.0063	.9435
31	715	4794	1985254	.0023	.9458
32	716	9085	1994339	.0043	.9502
33	717	20361	2014700	.0097	.9599
34	718	25638	2040338	.0122	.9721
35	719	22728	2063066	.0108	.9829
36	720	22626	2085692	.0108	.9937
37	721	8653	2094345	.0041	.9978
38	722	108	2094453	.0001	.9979
39	723	757	2095210	.0004	.9982
40	724	1031	2096241	.0005	.9987
41	725	880	2097121	.0004	.9991
42	726	880	2098001	.0004	.9995
43	727	782	2098783	.0004	.9999

MEAN, 19.80

VARIANCE, 32.87

N, 47

TABLE. BRISTOL BAY YRLY.. ESTIMATED TOTAL RUN SIZE
AS OBSERVED IN THE FISHING DISTRICT, 1974. (1) MONTH
AND DAY, (2) DAILY NUMBERS, (3) CUMULATIVE NUMBERS,
(4) DAILY PROPORTION, (5) CUMULATIVE PROPORTION.
RED SALMON, BRISTOL BAY, ALASKA

DAY	(1) ***	(2) *****	(3) *****	(4) *****	(5) *****
1	615	0	0	.0000	.0000
2	616	1008	1008	.0001	.0001
3	617	2030	3038	.0002	.0003
4	618	3593	6631	.0003	.0006
5	619	8393	15024	.0007	.0013
6	620	8903	23927	.0008	.0021
7	621	43403	67330	.0038	.0059
8	622	64077	131407	.0056	.0115
9	623	238212	369619	.0209	.0324
10	624	322998	692617	.0283	.0608
11	625	438864	1131481	.0385	.0993
12	626	648307	1779788	.0569	.1562
13	627	687027	2466815	.0603	.2165
14	628	854820	3321635	.0750	.2915
15	629	931698	4253333	.0818	.3733
16	630	1032882	5286215	.0906	.4639
17	701	1112694	6398909	.0977	.5616
18	702	711408	7110317	.0624	.6240
19	703	669930	7780247	.0588	.6828
20	704	770959	8551206	.0677	.7505
21	705	911269	9462475	.0800	.8304
22	706	869606	10332081	.0763	.9068
23	707	342659	10674740	.0301	.9368
24	708	147543	10822283	.0129	.9498
25	709	105978	10928261	.0093	.9591
26	710	91392	11019653	.0080	.9671
27	711	82470	11102123	.0072	.9743
28	712	73758	11175881	.0065	.9808
29	713	69504	11245385	.0061	.9869
30	714	58975	11304360	.0052	.9921
31	715	18318	11322678	.0016	.9937
32	716	14591	11337269	.0013	.9950
33	717	12149	11349418	.0011	.9961
34	718	13679	11363097	.0012	.9973
35	719	9623	11372720	.0008	.9981
36	720	6283	11379003	.0006	.9986
37	721	2952	11381955	.0003	.9989
38	722	4909	11386864	.0004	.9993
39	723	1961	11388825	.0002	.9995
40	724	3305	11392130	.0003	.9998
41	725	1260	11393390	.0001	.9999
42	726	918	11394308	.0001	1.0000

MEAN, 17.20

VARIANCE, 21.36

N, 47

TABLE. BRISTOL BAY YRLY.. ESTIMATED TOTAL RUN SIZE
AS OBSERVED IN THE FISHING DISTRICT, 1975. (1) MONTH
AND DAY, (2) DAILY NUMBERS, (3) CUMULATIVE NUMBERS,
(4) DAILY PROPORTION, (5) CUMULATIVE PROPORTION.
RED SALMON, BRISTOL BAY, ALASKA

DAY	(1) ***	(2) *****	(3) *****	(4) *****	(5) *****
1	615	96	96	.0000	.0000
2	616	1310	1406	.0001	.0001
3	617	1376	2782	.0001	.0001
4	618	2396	5178	.0001	.0002
5	619	2720	7898	.0001	.0003
6	620	2384	10282	.0001	.0004
7	621	516	10798	.0000	.0004
8	622	654	11452	.0000	.0005
9	623	31656	43108	.0013	.0017
10	624	439740	482848	.0177	.0194
11	625	446484	929332	.0180	.0374
12	626	541139	1470471	.0218	.0592
13	627	750504	2220975	.0302	.0893
14	628	769968	2990943	.0310	.1203
15	629	927076	3918021	.0373	.1576
16	630	1006690	4924711	.0405	.1981
17	701	1456164	6380875	.0586	.2567
18	702	1718052	8098927	.0691	.3258
19	703	1395144	9494071	.0561	.3819
20	704	1210356	10704427	.0487	.4306
21	705	2238681	12943108	.0901	.5207
22	706	2389741	15332849	.0961	.6168
23	707	1380689	16713538	.0555	.6724
24	708	1290081	18003619	.0519	.7243
25	709	1450249	19453868	.0583	.7826
26	710	1407228	20861096	.0566	.8392
27	711	1210902	22071998	.0487	.8879
28	712	768961	22840959	.0309	.9189
29	713	610616	23451575	.0246	.9434
30	714	381088	23832663	.0153	.9588
31	715	322558	24155221	.0130	.9717
32	716	317200	24472421	.0128	.9845
33	717	140856	24613277	.0057	.9902
34	718	102636	24715913	.0041	.9943
35	719	61606	24777519	.0025	.9968
36	720	13386	24790905	.0005	.9973
37	721	21226	24812131	.0009	.9982
38	722	16612	24828743	.0007	.9988
39	723	12828	24841571	.0005	.9994
40	724	12124	24853695	.0005	.9998
41	725	3585	24857280	.0001	1.0000
42	726	0	24857280	.0000	1.0000
43	727	0	24857280	.0000	1.0000

MEAN, 21.12

VARIANCE, 28.63

N, 47

TABLE. BBAY ALLYR TOTALS. ESTIMATED TOTAL RUN SIZE AS OBSERVED IN THE FISHING DISTRICT, 19*0. (1) MONTH AND DAY, (2) DAILY NUMBERS, (3) CUMULATIVE NUMBERS, (4) DAILY PROPORTION, (5) CUMULATIVE PROPORTION. RED SALMON, BRISTOL BAY, ALASKA

DAY	(1) ***	(2) *****	(3) *****	(4) *****	(5) *****
1	615	35524	35524	.0001	.0001
2	616	40814	76338	.0001	.0002
3	617	85121	161459	.0002	.0005
4	618	127440	288899	.0004	.0008
5	619	468754	757653	.0014	.0022
6	620	883751	1641404	.0026	.0048
7	621	1192960	2834364	.0035	.0082
8	622	1446766	4281130	.0042	.0124
9	623	2365765	6646895	.0069	.0193
10	624	4722934	11369829	.0137	.0330
11	625	6778709	18148538	.0197	.0528
12	626	7009846	25158384	.0204	.0731
13	627	10425006	35583390	.0303	.1034
14	628	13336290	48919680	.0388	.1422
15	629	19680993	68600673	.0572	.1994
16	630	17214506	85815179	.0500	.2494
17	701	21031377	106846556	.0611	.3106
18	702	22769281	129615837	.0662	.3768
19	703	23031266	152647103	.0669	.4437
20	704	24320435	176967538	.0707	.5144
21	705	21379390	198346928	.0621	.5765
22	706	21426420	219773348	.0623	.6388
23	707	17528087	237301435	.0510	.6898
24	708	18404163	255705598	.0535	.7433
25	709	14954175	270659773	.0435	.7867
26	710	14625567	285285340	.0425	.8293
27	711	12566536	297851876	.0365	.8658
28	712	10592817	308444693	.0308	.8966
29	713	9099932	317544625	.0265	.9230
30	714	6031667	323576292	.0175	.9406
31	715	4699941	328276233	.0137	.9542
32	716	4186737	332462970	.0122	.9664
33	717	3953116	336416086	.0115	.9779
34	718	2459494	338875580	.0071	.9850
35	719	1964584	340840164	.0057	.9907
36	720	934814	341774978	.0027	.9935
37	721	710883	342485861	.0021	.9955
38	722	531247	343017108	.0015	.9971
39	723	381340	343398448	.0011	.9982
40	724	396009	343794457	.0012	.9993
41	725	132567	343927024	.0004	.9997
42	726	54870	343981894	.0002	.9999
43	727	31658	344013552	.0001	1.0000

MEAN, 20.70

VARIANCE, 35.75

N, 47

TABLE. BBAY ALLYR AVRGS.. ESTIMATED TOTAL RUN SIZE
AS OBSERVED IN THE FISHING DISTRICT, 19*0. (1) MONTH
AND DAY, (2) DAILY NUMBERS, (3) CUMULATIVE NUMBERS,
(4) DAILY PROPORTION, (5) CUMULATIVE PROPORTION.
RED SALMON, BRISTOL BAY, ALASKA

DAY	(1) ***	(2) *****	(3) *****	(4) *****	(5) *****	
1	615	555	555	.0002	.0002	64
2	616	592	1147	.0003	.0005	69
3	617	935	2082	.0004	.0009	91
4	618	1370	3452	.0006	.0015	93
5	619	4551	8003	.0020	.0035	103
6	620	7752	15755	.0034	.0068	114
7	621	10465	26220	.0045	.0114	114
8	622	11215	37435	.0049	.0162	129
9	623	18198	55633	.0079	.0241	130
10	624	37783	93417	.0164	.0405	125
11	625	48768	142185	.0211	.0617	139
12	626	50431	192615	.0219	.0835	139
13	627	76095	268710	.0330	.1165	137
14	628	93261	361971	.0404	.1570	143
15	629	132980	494951	.0577	.2147	148
16	630	115534	610484	.0501	.2648	149
17	701	142104	752588	.0616	.3264	148
18	702	147852	900441	.0641	.3905	154
19	703	149554	1049994	.0649	.4554	154
20	704	157925	1207919	.0685	.5239	154
21	705	138827	1346746	.0602	.5841	154
22	706	139133	1485879	.0603	.6444	154
23	707	113819	1599698	.0494	.6938	154
24	708	119508	1719205	.0518	.7456	154
25	709	97105	1816310	.0421	.7877	154
26	710	95592	1911902	.0415	.8292	153
27	711	82134	1994036	.0356	.8648	153
28	712	70151	2064188	.0304	.8952	151
29	713	60264	2124452	.0261	.9213	151
30	714	39945	2164397	.0173	.9387	151
31	715	31125	2195522	.0135	.9522	151
32	716	27727	2223249	.0120	.9642	151
33	717	26180	2249429	.0114	.9755	151
34	718	16397	2265825	.0071	.9827	150
35	719	13274	2279099	.0058	.9884	148
36	720	6583	2285683	.0029	.9913	142
37	721	4937	2290619	.0021	.9934	144
38	722	3878	2294497	.0017	.9951	137
39	723	3316	2297813	.0014	.9965	115
40	724	3960	2301773	.0017	.9982	100
41	725	1894	2303667	.0008	.9991	70
42	726	831	2304498	.0004	.9994	66
43	727	674	2305172	.0003	.9997	47

MEAN, 20.56

VARIANCE, 38.18

N, 47

SECTION II. SUPPLEMENTARY TABLES

- Set 1. Kvichak River, Inside Test Fishery, 1960-1973; 1974-1976.
- Set 2. Egegik River, Inside Test Fishery, 1963-1971; 1976.
- Set 3. Ugashik River, Inside Test Fishery, 1961-1968.

TABLE. KVICIAK . INSIDE TEST FISHERY, 1960
 (1) DAY NUMBER, (2) MONTH-DAY, (3) DAILY INDEX,
 (4) CUMULATIVE INDEX, (5) DAILY PROPORTION,
 (6) CUMULATIVE PROPORTION

(1)	(2)	(3)	(4)	(5)	(6)
***	***	*****	*****	*****	*****
1	627	.6	.6	.0001	.0001
2	628	19.2	19.8	.0019	.0019
3	629	16.2	36.0	.0016	.0035
4	630	751.8	787.8	.0728	.0763
5	701	769.8	1557.6	.0745	.1508
6	702	789.0	2346.6	.0764	.2272
7	703	191.4	2538.0	.0185	.2457
8	704	566.4	3104.4	.0548	.3005
9	705	352.8	3457.2	.0342	.3347
10	706	379.8	3837.0	.0368	.3714
11	707	582.0	4419.0	.0563	.4278
12	708	1313.4	5732.4	.1271	.5549
13	709	2212.2	7944.6	.2141	.7691
14	710	802.2	8746.8	.0777	.8467
15	711	294.6	9041.4	.0285	.8752
16	712	816.0	9857.4	.0790	.9542
17	713	85.8	9943.2	.0083	.9625
18	714	55.2	9998.4	.0053	.9679
19	715	106.8	10105.2	.0103	.9782
20	716	120.6	10225.8	.0117	.9899
21	717	64.8	10290.6	.0063	.9962
22	718	25.2	10315.8	.0024	.9986
23	719	6.0	10321.8	.0006	.9992
24	720	3.0	10324.8	.0003	.9995
25	721	.0	10324.8	.0000	.9995
26	722	5.4	10330.2	.0005	1.0000

MEAN, 10.97 VARIANCE, 16.83 N, 26

TABLE. KVICHAH . INSIDE TEST FISHERY, 1961
 (1) DAY NUMBER, (2) MONTH-DAY, (3) DAILY INDEX,
 (4) CUMULATIVE INDEX, (5) DAILY PROPORTION,
 (6) CUMULATIVE PROPORTION

(1)	(2)	(3)	(4)	(5)	(6)
***	***	*****	*****	*****	*****
1	624	1.2	1.2	.0007	.0007
2	625	45.0	46.2	.0276	.0284
3	626	54.0	100.2	.0331	.0615
4	627	180.6	280.8	.1108	.1723
5	628	27.0	307.8	.0166	.1889
6	629	6.6	314.4	.0041	.1929
7	630	27.6	342.0	.0169	.2099
8	701	3.0	345.0	.0018	.2117
9	702	291.0	636.0	.1786	.3903
10	703	187.8	823.8	.1152	.5055
11	704	81.0	904.8	.0497	.5552
12	705	33.0	937.8	.0203	.5755
13	706	15.6	953.4	.0096	.5851
14	707	10.2	963.6	.0063	.5913
15	708	12.6	976.2	.0077	.5990
16	709	21.0	997.2	.0129	.6119
17	710	69.6	1066.8	.0427	.6546
18	711	326.4	1393.2	.2003	.8549
19	712	51.0	1444.2	.0313	.8862
20	713	80.4	1524.6	.0493	.9356
21	714	20.4	1545.0	.0125	.9481
22	715	5.4	1550.4	.0033	.9514
23	716	33.6	1584.0	.0206	.9720
24	717	9.6	1593.6	.0059	.9779
25	718	3.6	1597.2	.0022	.9801
26	719	3.6	1600.8	.0022	.9823
27	720	20.4	1621.2	.0125	.9948
28	721	3.6	1624.8	.0022	.9971
29	722	4.8	1629.6	.0029	1.0000

MEAN, 12.38

VARIANCE, 39.02

N, 29

TABLE. KVICHAK . INSIDE TEST FISHERY, 1962
 (1) DAY NUMBER, (2) MONTH-DAY, (3) DAILY INDEX,
 (4) CUMULATIVE INDEX, (5) DAILY PROPORTION,
 (6) CUMULATIVE PROPORTION

(1)	(2)	(3)	(4)	(5)	(6)
***	***	*****	*****	*****	*****
1	625	569.4	569.4	.0592	.0592
2	626	65.4	634.8	.0068	.0660
3	627	57.6	692.4	.0060	.0720
4	628	7.2	699.6	.0007	.0728
5	629	1343.4	2043.0	.1397	.2125
6	630	1113.0	3156.0	.1158	.3283
7	701	103.2	3259.2	.0107	.3390
8	702	909.0	4168.2	.0946	.4336
9	703	1095.0	5263.2	.1139	.5475
10	704	1235.4	6498.6	.1285	.6760
11	705	1980.0	8478.6	.2060	.8820
12	706	413.4	8892.0	.0430	.9250
13	707	421.8	9313.8	.0439	.9689
14	708	56.4	9370.2	.0059	.9747
15	709	14.4	9384.6	.0015	.9762
16	710	11.4	9396.0	.0012	.9774
17	711	12.6	9408.6	.0013	.9787
18	712	28.8	9437.4	.0030	.9817
19	713	19.8	9457.2	.0021	.9838
20	714	15.6	9472.8	.0016	.9854
21	715	120.0	9592.8	.0125	.9979
22	716	3.6	9596.4	.0004	.9983
23	717	9.6	9606.0	.0010	.9993
24	718	7.2	9613.2	.0007	1.0000

MEAN, 8.56 VARIANCE, 12.84 N, 24

TABLE. KVICHAK . INSIDE TEST FISHERY, 1963
 (1) DAY NUMBER, (2) MONTH-DAY, (3) DAILY INDEX,
 (4) CUMULATIVE INDEX, (5) DAILY PROPORTION,
 (6) CUMULATIVE PROPORTION

(1)	(2)	(3)	(4)	(5)	(6)
***	***	*****	*****	*****	*****
1	624	6.0	6.0	.0005	.0005
2	625	4.2	10.2	.0004	.0009
3	626	.0	10.2	.0000	.0009
4	627	.0	10.2	.0000	.0009
5	628	721.8	732.0	.0644	.0653
6	629	414.0	1146.0	.0369	.1023
7	630	151.8	1297.8	.0135	.1158
8	701	1066.2	2364.0	.0951	.2110
9	702	203.4	2567.4	.0182	.2291
10	703	545.4	3112.8	.0487	.2778
11	704	739.2	3852.0	.0660	.3438
12	705	1228.2	5080.2	.1096	.4534
13	706	868.2	5948.4	.0775	.5308
14	707	1704.6	7653.0	.1521	.6830
15	708	115.8	7768.8	.0103	.6933
16	709	750.6	8519.4	.0670	.7603
17	710	762.6	9282.0	.0681	.8283
18	711	247.8	9529.8	.0221	.8504
19	712	282.6	9812.4	.0252	.8757
20	713	348.0	10160.4	.0311	.9067
21	714	220.2	10380.6	.0197	.9264
22	715	295.8	10676.4	.0264	.9528
23	716	141.0	10817.4	.0126	.9654
24	717	216.0	11033.4	.0193	.9846
25	718	172.2	11205.6	.0154	1.0000

MEAN, 13.24

VARIANCE, 24.03

N, 25

TABLE. KVICHAK . INSIDE TEST FISHERY, 1964
 (1) DAY NUMBER, (2) MONTH-DAY, (3) DAILY INDEX,
 (4) CUMULATIVE INDEX, (5) DAILY PROPORTION,
 (6) CUMULATIVE PROPORTION

(1)	(2)	(3)	(4)	(5)	(6)	
***	***	*****	*****	*****	*****	
1	622	6.0	6.0	.0008	.0008	
2	623	6.6	12.6	.0009	.0017	
3	624	6.0	18.6	.0008	.0026	
4	625	15.6	34.2	.0021	.0047	
5	626	12.0	46.2	.0016	.0063	
6	627	368.4	414.6	.0505	.0569	
7	628	20.4	435.0	.0028	.0597	
8	629	93.0	528.0	.0128	.0724	
9	630	.0	528.0	.0000	.0724	
10	701	27.6	555.6	.0038	.0762	
11	702	12.6	568.2	.0017	.0780	
12	703	.0	568.2	.0000	.0780	
13	704	169.8	738.0	.0233	.1013	
14	705	1137.0	1875.0	.1560	.2572	
15	706	1539.6	3414.6	.2112	.4685	
16	707	1667.4	5082.0	.2288	.6972	
17	708	217.8	5299.8	.0299	.7271	
18	709	115.8	5415.6	.0159	.7430	
19	710	610.2	6025.8	.0837	.8267	
20	711	251.4	6277.2	.0345	.8612	
21	712	342.6	6619.8	.0470	.9082	
22	713	155.4	6775.2	.0213	.9295	
23	714	244.2	7019.4	.0335	.9630	
24	715	51.0	7070.4	.0070	.9700	
25	716	120.0	7190.4	.0165	.9865	
26	717	98.4	7288.8	.0135	1.0000	
MEAN,	16.05		VARIANCE,	16.44	N,	26

TABLE. KVICHAK . INSIDE TEST FISHERY, 1965
 (1) DAY NUMBER, (2) MONTH-DAY, (3) DAILY INDEX,
 (4) CUMULATIVE INDEX, (5) DAILY PROPORTION,
 (6) CUMULATIVE PROPORTION

(1)	(2)	(3)	(4)	(5)	(6)
***	***	*****	*****	*****	*****
1	622	31.2	31.2	.0019	.0019
2	623	30.6	61.8	.0018	.0037
3	624	637.8	699.6	.0386	.0423
4	625	72.6	772.2	.0044	.0467
5	626	8.4	780.6	.0005	.0472
6	627	15.6	796.2	.0009	.0481
7	628	495.0	1291.2	.0299	.0780
8	629	442.2	1733.4	.0267	.1048
9	630	394.8	2128.2	.0239	.1286
10	701	660.0	2788.2	.0399	.1685
11	702	1027.8	3816.0	.0621	.2307
12	703	1597.8	5413.8	.0966	.3272
13	704	1563.6	6977.4	.0945	.4217
14	705	1797.6	8775.0	.1087	.5304
15	706	1904.4	10679.4	.1151	.6455
16	707	2314.2	12993.6	.1399	.7854
17	708	1389.6	14383.2	.0840	.8694
18	709	1086.6	15469.8	.0657	.9350
19	710	814.8	16284.6	.0492	.9843
20	711	259.8	16544.4	.0157	1.0000
MEAN,	13.60		VARIANCE,	14.61	N, 20

TABLE. KVICHAK . INSIDE TEST FISHERY, 1966
 (1) DAY NUMBER, (2) MONTH-DAY, (3) DAILY INDEX,
 (4) CUMULATIVE INDEX, (5) DAILY PROPORTION,
 (6) CUMULATIVE PROPORTION

(1)	(2)	(3)	(4)	(5)	(6)
***	***	*****	*****	*****	*****
1	628	6.0	6.0	.0005	.0005
2	629	208.2	214.2	.0178	.0183
3	630	319.8	534.0	.0274	.0457
4	701	78.6	612.6	.0067	.0524
5	702	910.2	1522.8	.0779	.1303
6	703	3307.8	4830.6	.2831	.4135
7	704	1440.0	6270.6	.1233	.5367
8	705	2020.8	8291.4	.1730	.7097
9	706	1236.0	9527.4	.1058	.8155
10	707	315.6	9843.0	.0270	.8425
11	708	946.2	10789.2	.0810	.9235
12	709	88.2	10877.4	.0075	.9311
13	710	190.8	11068.2	.0163	.9474
14	711	132.0	11200.2	.0113	.9587
15	712	91.8	11292.0	.0079	.9666
16	713	244.2	11536.2	.0209	.9875
17	714	65.4	11601.6	.0056	.9931
18	715	81.0	11682.6	.0069	1.0000
MEAN,	7.73		VARIANCE,	8.09	N, 18

TABLE. KVICHAK . INSIDE TEST FISHERY, 1967
 (1) DAY NUMBER, (2) MONTH-DAY, (3) DAILY INDEX,
 (4) CUMULATIVE INDEX, (5) DAILY PROPORTION,
 (6) CUMULATIVE PROPORTION

(1)	(2)	(3)	(4)	(5)	(6)
***	***	*****	*****	*****	*****
1	621	79.8	79.8	.0050	.0050
2	622	97.8	177.6	.0061	.0112
3	623	33.6	211.2	.0021	.0133
4	624	32.4	243.6	.0020	.0153
5	625	360.0	603.6	.0226	.0379
6	626	79.8	683.4	.0050	.0429
7	627	136.8	820.2	.0086	.0515
8	628	894.0	1714.2	.0562	.1077
9	629	1284.0	2998.2	.0807	.1883
10	630	2142.0	5140.2	.1346	.3229
11	701	654.0	5794.2	.0411	.3640
12	702	1206.0	7000.2	.0758	.4397
13	703	1056.0	8056.2	.0663	.5061
14	704	1902.0	9958.2	.1195	.6256
15	705	1854.6	11812.8	.1165	.7421
16	706	1645.8	13458.6	.1034	.8455
17	707	1554.0	15012.6	.0976	.9431
18	708	600.0	15612.6	.0377	.9808
19	709	181.2	15793.8	.0114	.9922
20	710	124.8	15918.6	.0078	1.0000
MEAN, 12.76		VARIANCE, 12.75		N, 20	

TABLE. KVICHAK . INSIDE TEST FISHERY, 1968
 (1) DAY NUMBER, (2) MONTH-DAY, (3) DAILY INDEX,
 (4) CUMULATIVE INDEX, (5) DAILY PROPORTION,
 (6) CUMULATIVE PROPORTION

(1)	(2)	(3)	(4)	(5)	(6)	
***	***	*****	*****	*****	*****	
1	622	3.0	3.0	.0005	.0005	
2	625	1.2	4.2	.0002	.0007	
3	626	7.2	11.4	.0012	.0019	
4	627	1119.0	1130.4	.1828	.1846	
5	628	540.6	1671.0	.0883	.2729	
6	629	141.0	1812.0	.0230	.2960	
7	630	76.2	1888.2	.0124	.3084	
8	701	546.6	2434.8	.0893	.3977	
9	702	204.6	2639.4	.0334	.4311	
10	703	440.4	3079.8	.0719	.5030	
11	704	747.6	3827.4	.1221	.6251	
12	705	423.6	4251.0	.0692	.6943	
13	706	504.0	4755.0	.0823	.7767	
14	707	172.8	4927.8	.0282	.8049	
15	708	211.2	5139.0	.0345	.8394	
16	709	181.2	5320.2	.0296	.8690	
17	710	536.4	5856.6	.0876	.9566	
18	711	265.8	6122.4	.0434	1.0000	
MEAN,	10.04		VARIANCE,	20.36	N,	18

TABLE. KVICHAK . INSIDE TEST FISHERY, 1969
 (1) DAY NUMBER, (2) MONTH-DAY, (3) DAILY INDEX,
 (4) CUMULATIVE INDEX, (5) DAILY PROPORTION,
 (6) CUMULATIVE PROPORTION

(1)	(2)	(3)	(4)	(5)	(6)
***	***	*****	*****	*****	*****
1	624	2.4	2.4	.0002	.0002
2	625	3.0	5.4	.0002	.0004
3	626	1.8	7.2	.0001	.0005
4	627	.0	7.2	.0000	.0005
5	628	189.0	196.2	.0126	.0131
6	629	1392.6	1588.8	.0930	.1061
7	630	2071.8	3660.6	.1383	.2443
8	701	2859.0	6519.6	.1908	.4352
9	702	3151.8	9671.4	.2104	.6456
10	703	1632.0	11303.4	.1089	.7545
11	704	2315.4	13618.8	.1546	.9090
12	705	600.0	14218.8	.0400	.9491
13	706	28.2	14247.0	.0019	.9510
14	707	558.0	14805.0	.0372	.9882
15	708	45.6	14850.6	.0030	.9913
16	709	39.6	14890.2	.0026	.9939
17	710	91.2	14981.4	.0061	1.0000
MEAN,	9.02		VARIANCE,	4.48	N, 17

TABLE. KVICHAH . INSIDE TEST FISHERY, 1970
 (1) DAY NUMBER, (2) MONTH-DAY, (3) DAILY INDEX,
 (4) CUMULATIVE INDEX, (5) DAILY PROPORTION,
 (6) CUMULATIVE PROPORTION

(1)	(2)	(3)	(4)	(5)	(6)
***	***	*****	*****	*****	*****
1	623	.0	.0	.0000	.0000
2	624	.0	.0	.0000	.0000
3	625	7.2	7.2	.0004	.0004
4	626	139.2	146.4	.0079	.0083
5	627	47.4	193.8	.0027	.0110
6	628	1096.8	1290.6	.0620	.0730
7	629	914.4	2205.0	.0517	.1247
8	630	1284.6	3489.6	.0727	.1974
9	701	2580.0	6069.6	.1460	.3434
10	702	2470.8	8540.4	.1398	.4831
11	703	2361.6	10902.0	.1336	.6167
12	704	2674.2	13576.2	.1513	.7680
13	705	1540.2	15116.4	.0871	.8551
14	706	977.4	16093.8	.0553	.9104
15	707	779.4	16873.2	.0441	.9545
16	708	286.2	17159.4	.0162	.9707
17	709	201.0	17360.4	.0114	.9821
18	710	160.2	17520.6	.0091	.9911
19	711	88.2	17608.8	.0050	.9961
20	712	41.4	17650.2	.0023	.9985
21	713	27.0	17677.2	.0015	1.0000
22	714	.0	17677.2	.0000	1.0000

MEAN, 10.72

VARIANCE, 7.81

N, 22

TABLE. KVICHAK . INSIDE TEST FISHERY, 1971
 (1) DAY NUMBER, (2) MONTH-DAY, (3) DAILY INDEX,
 (4) CUMULATIVE INDEX, (5) DAILY PROPORTION,
 (6) CUMULATIVE PROPORTION

(1)	(2)	(3)	(4)	(5)	(6)
***	***	*****	*****	*****	*****
1	627	3.6	3.6	.0003	.0003
2	628	.0	3.6	.0000	.0003
3	629	16.8	20.4	.0016	.0019
4	630	9.0	29.4	.0008	.0027
5	701	1.8	31.2	.0002	.0029
6	702	.0	31.2	.0000	.0029
7	703	.0	31.2	.0000	.0029
8	704	.0	31.2	.0000	.0029
9	705	6.6	37.8	.0006	.0035
10	706	1659.6	1697.4	.1531	.1566
11	707	2406.0	4103.4	.2220	.3786
12	708	655.8	4759.2	.0605	.4391
13	709	537.6	5296.8	.0496	.4887
14	710	1022.0	6318.8	.0943	.5830
15	711	192.6	6511.4	.0178	.6008
16	712	976.8	7488.2	.0901	.6909
17	713	1821.6	9309.8	.1681	.8590
18	714	384.0	9693.8	.0354	.8944
19	715	928.8	10622.6	.0857	.9801
20	716	156.6	10779.2	.0144	.9946
21	717	58.8	10838.0	.0054	1.0000
MEAN,	13.91		VARIANCE,	10.47	N, 21

TABLE. KVICHAK . INSIDE TEST FISHERY, 1972
 (1) DAY NUMBER, (2) MONTH-DAY, (3) DAILY INDEX,
 (4) CUMULATIVE INDEX, (5) DAILY PROPORTION,
 (6) CUMULATIVE PROPORTION

(1)	(2)	(3)	(4)	(5)	(6)
***	***	*****	*****	*****	*****
1	629	8.0	8.0	.0012	.0012
2	630	88.0	96.0	.0130	.0141
3	701	40.0	136.0	.0059	.0200
4	702	12.0	148.0	.0018	.0218
5	703	1.0	149.0	.0001	.0220
6	704	42.0	191.0	.0062	.0281
7	705	379.0	570.0	.0558	.0840
8	706	2101.0	2671.0	.3095	.3935
9	707	1091.0	3762.0	.1607	.5542
10	708	147.0	3909.0	.0217	.5759
11	709	1195.0	5104.0	.1760	.7519
12	710	197.0	5301.0	.0290	.7809
13	711	571.0	5872.0	.0841	.8651
14	712	490.0	6362.0	.0722	.9372
15	713	235.0	6597.0	.0346	.9719
16	714	47.0	6644.0	.0069	.9788
17	715	88.0	6732.0	.0130	.9918
18	716	56.0	6788.0	.0082	1.0000

MEAN, 10.01 VARIANCE, 7.76 N, 18

TABLE. KVICHAK . INSIDE TEST FISHERY, 1973
 (1) DAY NUMBER, (2) MONTH-DAY, (3) DAILY INDEX,
 (4) CUMULATIVE INDEX, (5) DAILY PROPORTION,
 (6) CUMULATIVE PROPORTION

(1)	(2)	(3)	(4)	(5)	(6)
***	***	*****	*****	*****	*****
1	624	50.0	50.0	.0086	.0086
2	625	57.0	107.0	.0098	.0185
3	626	85.0	192.0	.0147	.0331
4	627	152.0	344.0	.0262	.0594
5	628	7.0	351.0	.0012	.0606
6	629	329.0	680.0	.0568	.1173
7	630	81.0	761.0	.0140	.1313
8	701	64.0	825.0	.0110	.1423
9	702	129.0	954.0	.0223	.1646
10	703	37.0	991.0	.0064	.1710
11	704	373.0	1364.0	.0644	.2353
12	705	859.0	2223.0	.1482	.3835
13	706	806.0	3029.0	.1391	.5226
14	707	669.0	3698.0	.1154	.6380
15	708	1085.0	4783.0	.1872	.8252
16	709	482.0	5265.0	.0832	.9084
17	710	243.0	5508.0	.0419	.9503
18	711	288.0	5796.0	.0497	1.0000
MEAN,	12.63		VARIANCE,	13.87	N, 18

TABLE. KVICHAK . INSIDE TEST FISHERY, 1975
 (1) DAY NUMBER, (2) MONTH-DAY, (3) DAILY INDEX,
 (4) CUMULATIVE INDEX, (5) DAILY PROPORTION,
 (6) CUMULATIVE PROPORTION

(1)	(2)	(3)	(4)	(5)	(6)
***	***	*****	*****	*****	*****
1	703	3000.0	3000.0	.1071	.1071
2	704	2500.0	5500.0	.0893	.1964
3	705	1700.0	7200.0	.0607	.2571
4	707	7400.0	14600.0	.2643	.5214
5	708	7000.0	21600.0	.2500	.7714
6	710	1500.0	23100.0	.0536	.8250
7	711	2200.0	25300.0	.0786	.9036
8	712	2200.0	27500.0	.0786	.9821
9	713	300.0	27800.0	.0107	.9929
10	714	200.0	28000.0	.0071	1.0000
MEAN,	4.44		VARIANCE,	4.14	N, 10

TABLE. KVICHAK . INSIDE TEST FISHERY, 1976
 (1) DAY NUMBER, (2) MONTH-DAY, (3) DAILY INDEX,
 (4) CUMULATIVE INDEX, (5) DAILY PROPORTION,
 (6) CUMULATIVE PROPORTION

(1)	(2)	(3)	(4)	(5)	(6)
***	***	*****	*****	*****	*****
1	625	.0	.0	.0000	.0000
2	626	.0	.0	.0000	.0000
3	627	1.2	1.2	.0001	.0001
4	628	.0	1.2	.0000	.0001
5	629	.0	1.2	.0000	.0001
6	630	.0	1.2	.0000	.0001
7	701	375.6	376.8	.0371	.0373
8	702	197.2	574.0	.0195	.0568
9	703	546.4	1120.4	.0540	.1108
10	704	691.5	1811.9	.0684	.1792
11	705	2456.1	4268.0	.2429	.4221
12	706	106.8	4374.8	.0106	.4326
13	707	16.0	4390.8	.0016	.4342
14	708	148.3	4539.1	.0147	.4489
15	709	2503.0	7042.1	.2475	.6964
16	710	1816.3	8858.5	.1796	.8761
17	711	1253.3	10111.8	.1239	1.0000
MEAN, 13.31		VARIANCE, 8.81		N, 17	

TABLE. EGEKIK . INSIDE TEST FISHERY, 1963
 (1) DAY NUMBER, (2) MONTH-DAY, (3) DAILY INDEX,
 (4) CUMULATIVE INDEX, (5) DAILY PROPORTION,
 (6) CUMULATIVE PROPORTION

(1)	(2)	(3)	(4)	(5)	(6)
***	***	*****	*****	*****	*****
1	626	215.4	215.4	.0278	.0278
2	627	96.0	311.4	.0124	.0401
3	628	43.8	355.2	.0056	.0458
4	629	499.2	854.4	.0643	.1101
5	630	1065.6	1920.0	.1373	.2475
6	701	677.4	2597.4	.0873	.3348
7	702	970.8	3568.2	.1251	.4599
8	703	1409.4	4977.6	.1816	.6415
9	704	478.2	5455.8	.0616	.7032
10	705	593.4	6049.2	.0765	.7796
11	706	166.8	6216.0	.0215	.8011
12	707	268.8	6484.8	.0346	.8358
13	708	169.8	6654.6	.0219	.8577
14	709	182.4	6837.0	.0235	.8812
15	710	47.4	6884.4	.0061	.8873
16	711	364.2	7248.6	.0469	.9342
17	712	372.6	7621.2	.0480	.9822
18	713	53.4	7674.6	.0069	.9891
19	714	19.8	7694.4	.0026	.9917
20	715	17.4	7711.8	.0022	.9939
21	716	24.6	7736.4	.0032	.9971
22	717	14.2	7750.6	.0018	.9989
23	718	8.4	7759.0	.0011	1.0000

MEAN, 8.46

VARIANCE, 16.64

N, 23

TABLE. EGEGIK . INSIDE TEST FISHERY, 1964
 (1) DAY NUMBER, (2) MONTH-DAY, (3) DAILY INDEX,
 (4) CUMULATIVE INDEX, (5) DAILY PROPORTION,
 (6) CUMULATIVE PROPORTION

(1)	(2)	(3)	(4)	(5)	(6)
***	***	*****	*****	*****	*****
1	622	7.2	7.2	.0014	.0014
2	623	2.4	9.6	.0005	.0018
3	624	49.2	58.8	.0094	.0113
4	625	39.0	97.8	.0075	.0187
5	626	11.4	109.2	.0022	.0209
6	627	64.2	173.4	.0123	.0332
7	628	364.2	537.6	.0697	.1029
8	629	184.8	722.4	.0354	.1383
9	630	7.8	730.2	.0015	.1398
10	701	168.0	898.2	.0322	.1720
11	702	120.0	1018.2	.0230	.1949
12	703	4.2	1022.4	.0008	.1957
13	704	100.8	1123.2	.0193	.2150
14	705	885.0	2008.2	.1694	.3844
15	706	2203.2	4211.4	.4218	.8062
16	707	252.0	4463.4	.0482	.8545
17	708	38.4	4501.8	.0074	.8618
18	709	60.0	4561.8	.0115	.8733
19	710	31.2	4593.0	.0060	.8793
20	711	149.4	4742.4	.0286	.9079
21	712	214.2	4956.6	.0410	.9489
22	713	243.6	5200.2	.0466	.9955
23	714	9.0	5209.2	.0017	.9972
24	715	7.8	5217.0	.0015	.9987
25	716	6.6	5223.6	.0013	1.0000

MEAN, 14.25 VARIANCE, 16.04 N, 25

TABLE. EGEGIK . INSIDE TEST FISHERY, 1965
 (1) DAY NUMBER, (2) MONTH-DAY, (3) DAILY INDEX,
 (4) CUMULATIVE INDEX, (5) DAILY PROPORTION,
 (6) CUMULATIVE PROPORTION

(1)	(2)	(3)	(4)	(5)	(6)
***	***	*****	*****	*****	*****
1	623	4.2	4.2	.0009	.0009
2	624	.0	4.2	.0000	.0009
3	625	.0	4.2	.0000	.0009
4	626	34.8	39.0	.0079	.0088
5	627	81.6	120.6	.0184	.0272
6	628	88.2	208.8	.0199	.0472
7	629	96.0	304.8	.0217	.0689
8	630	160.8	465.6	.0363	.1052
9	701	393.6	859.2	.0889	.1941
10	702	859.2	1718.4	.1941	.3882
11	703	138.0	1856.4	.0312	.4194
12	704	411.0	2267.4	.0928	.5122
13	705	334.8	2602.2	.0756	.5878
14	706	715.8	3318.0	.1617	.7495
15	707	100.8	3418.8	.0228	.7723
16	708	545.4	3964.2	.1232	.8955
17	709	189.0	4153.2	.0427	.9382
18	710	38.4	4191.6	.0087	.9469
19	711	27.6	4219.2	.0062	.9531
20	712	207.6	4426.8	.0469	1.0000
MEAN,	12.38		VARIANCE,	12.41	N, 20

TABLE. EGEGIK . INSIDE TEST FISHERY, 1966
 (1) DAY NUMBER, (2) MONTH-DAY, (3) DAILY INDEX,
 (4) CUMULATIVE INDEX, (5) DAILY PROPORTION,
 (6) CUMULATIVE PROPORTION

(1)	(2)	(3)	(4)	(5)	(6)	
***	***	*****	*****	*****	*****	
1	624	6.6	6.6	.0008	.0008	
2	625	28.2	34.8	.0032	.0040	
3	626	152.4	187.2	.0174	.0214	
4	627	804.0	991.2	.0918	.1131	
5	628	63.0	1054.2	.0072	.1203	
6	629	202.2	1256.4	.0231	.1434	
7	630	1615.8	2872.2	.1844	.3278	
8	701	202.2	3074.4	.0231	.3509	
9	702	313.8	3388.2	.0358	.3867	
10	703	631.2	4019.4	.0720	.4588	
11	704	940.2	4959.6	.1073	.5661	
12	705	1401.0	6360.6	.1599	.7260	
13	706	376.8	6737.4	.0430	.7690	
14	707	1215.0	7952.4	.1387	.9077	
15	708	511.8	8464.2	.0584	.9661	
16	709	237.6	8701.8	.0271	.9932	
17	710	28.8	8730.6	.0033	.9965	
18	711	18.0	8748.6	.0021	.9986	
19	712	11.4	8760.0	.0013	.9999	
20	713	1.2	8761.2	.0001	1.0000	
21	714	.0	8761.2	.0000	1.0000	
MEAN,	10.15		VARIANCE,	12.94	N,	21

TABLE. EGEKIK . INSIDE TEST FISHERY, 1967
 (1) DAY NUMBER, (2) MONTH-DAY, (3) DAILY INDEX,
 (4) CUMULATIVE INDEX, (5) DAILY PROPORTION,
 (6) CUMULATIVE PROPORTION

(1)	(2)	(3)	(4)	(5)	(6)
***	***	*****	*****	*****	*****
1	624	36.0	36.0	.0106	.0106
2	625	16.8	52.8	.0050	.0156
3	626	25.8	78.6	.0076	.0232
4	627	350.4	429.0	.1033	.1265
5	628	265.8	694.8	.0784	.2048
6	629	154.8	849.6	.0456	.2504
7	630	354.0	1203.6	.1044	.3548
8	701	520.8	1724.4	.1535	.5083
9	702	132.0	1856.4	.0389	.5472
10	703	205.8	2062.2	.0607	.6079
11	704	126.0	2188.2	.0371	.6450
12	705	160.8	2349.0	.0474	.6924
13	706	60.0	2409.0	.0177	.7101
14	707	381.0	2790.0	.1123	.8224
15	708	301.8	3091.8	.0890	.9114
16	709	220.8	3312.6	.0651	.9765
17	710	79.8	3392.4	.0235	1.0000
MEAN,	9.59		VARIANCE,	17.29	N, 17

TABLE. EGEGIK . INSIDE TEST FISHERY, 1968
 (1) DAY NUMBER, (2) MONTH-DAY, (3) DAILY INDEX,
 (4) CUMULATIVE INDEX, (5) DAILY PROPORTION,
 (6) CUMULATIVE PROPORTION

(1)	(2)	(3)	(4)	(5)	(6)	
***	***	*****	*****	*****	*****	
1	620	7.8	7.8	.0019	.0019	
2	621	4.2	12.0	.0010	.0030	
3	622	35.2	47.2	.0088	.0118	
4	623	63.0	110.2	.0157	.0274	
5	624	48.0	158.2	.0120	.0394	
6	625	59.4	217.6	.0148	.0542	
7	626	192.6	410.2	.0480	.1022	
8	628	122.4	532.6	.0305	.1326	
9	629	232.8	765.4	.0580	.1906	
10	630	206.4	971.8	.0514	.2420	
11	701	213.0	1184.8	.0530	.2950	
12	702	422.4	1607.2	.1052	.4002	
13	703	800.4	2407.6	.1993	.5996	
14	704	319.8	2727.4	.0796	.6792	
15	705	224.4	2951.8	.0559	.7351	
16	706	172.8	3124.6	.0430	.7781	
17	707	190.8	3315.4	.0475	.8256	
18	708	137.4	3452.8	.0342	.8598	
19	709	108.0	3560.8	.0269	.8867	
20	710	154.8	3715.6	.0385	.9253	
21	711	67.2	3782.8	.0167	.9420	
22	712	118.8	3901.6	.0296	.9716	
23	713	114.0	4015.6	.0284	1.0000	
MEAN,	13.30		VARIANCE,	19.62	N,	23

TABLE. EGEGIK . INSIDE TEST FISHERY, 1969
 (1) DAY NUMBER, (2) MONTH-DAY, (3) DAILY INDEX,
 (4) CUMULATIVE INDEX, (5) DAILY PROPORTION,
 (6) CUMULATIVE PROPORTION

(1)	(2)	(3)	(4)	(5)	(6)
***	***	*****	*****	*****	*****
1	625	102.6	102.6	.0297	.0297
2	626	76.2	178.8	.0220	.0517
3	627	11.4	190.2	.0033	.0550
4	628	36.6	226.8	.0106	.0655
5	629	218.4	445.2	.0631	.1287
6	630	295.8	741.0	.0855	.2142
7	701	741.6	1482.6	.2143	.4285
8	702	139.2	1621.8	.0402	.4687
9	703	447.0	2068.8	.1292	.5979
10	704	418.2	2487.0	.1209	.7188
11	705	487.2	2974.2	.1408	.8596
12	706	343.6	3317.8	.0993	.9589
13	707	121.2	3439.0	.0350	.9939
14	708	21.0	3460.0	.0061	1.0000
MEAN,	8.43		VARIANCE,	8.00	N, 14

TABLE. EGEKIK . INSIDE TEST FISHERY, 1970
 (1) DAY NUMBER, (2) MONTH-DAY, (3) DAILY INDEX,
 (4) CUMULATIVE INDEX, (5) DAILY PROPORTION,
 (6) CUMULATIVE PROPORTION

(1)	(2)	(3)	(4)	(5)	(6)
***	***	*****	*****	*****	*****
1	623	3.0	3.0	.0012	.0012
2	624	1.2	4.2	.0005	.0016
3	625	9.0	13.2	.0035	.0052
4	626	12.6	25.8	.0049	.0101
5	627	3.0	28.8	.0012	.0113
6	628	8.4	37.2	.0033	.0146
7	629	11.4	48.6	.0045	.0190
8	630	47.4	96.0	.0185	.0376
9	701	192.6	288.6	.0754	.1129
10	702	128.4	417.0	.0502	.1632
11	703	30.0	447.0	.0117	.1749
12	704	13.8	460.8	.0054	.1803
13	705	615.6	1076.4	.2409	.4212
14	706	627.6	1704.0	.2456	.6668
15	707	364.2	2068.2	.1425	.8093
16	708	70.8	2139.0	.0277	.8371
17	709	205.2	2344.2	.0803	.9174
18	713	60.0	2404.2	.0235	.9408
19	714	66.6	2470.8	.0261	.9669
20	715	49.8	2520.6	.0195	.9864
21	716	34.8	2555.4	.0136	1.0000
MEAN,	13.72		VARIANCE,	8.73	N, 21

TABLE. EGEKIK . INSIDE TEST FISHERY, 1971
 (1) DAY NUMBER, (2) MONTH-DAY, (3) DAILY INDEX,
 (4) CUMULATIVE INDEX, (5) DAILY PROPORTION,
 (6) CUMULATIVE PROPORTION

(1)	(2)	(3)	(4)	(5)	(6)
***	***	*****	*****	*****	*****
1	624	120.0	120.0	.0412	.0412
2	625	3.4	123.4	.0012	.0423
3	626	11.2	134.6	.0038	.0462
4	627	3.8	138.4	.0013	.0475
5	628	28.8	167.2	.0099	.0574
6	629	96.9	264.1	.0333	.0906
7	630	68.6	332.7	.0235	.1142
8	701	47.4	380.1	.0163	.1304
9	702	64.2	444.3	.0220	.1525
10	703	88.2	532.5	.0303	.1827
11	704	6.9	539.4	.0024	.1851
12	705	19.5	558.9	.0067	.1918
13	706	228.7	787.6	.0785	.2703
14	707	184.2	971.8	.0632	.3335
15	708	142.0	1113.8	.0487	.3822
16	709	275.5	1389.3	.0945	.4768
17	710	592.2	1981.5	.2032	.6800
18	711	212.9	2194.4	.0731	.7531
19	712	81.3	2275.7	.0279	.7810
20	713	194.3	2470.0	.0667	.8476
21	714	85.2	2555.2	.0292	.8769
22	715	157.7	2712.9	.0541	.9310
23	716	164.2	2877.1	.0563	.9873
24	717	36.9	2914.0	.0127	1.0000

MEAN, 15.40

VARIANCE, 28.85

N, 24

TABLE. EGEKIK . INSIDE TEST FISHERY, 1976
 (1) DAY NUMBER, (2) MONTH-DAY, (3) DAILY INDEX,
 (4) CUMULATIVE INDEX, (5) DAILY PROPORTION,
 (6) CUMULATIVE PROPORTION

(1)	(2)	(3)	(4)	(5)	(6)
***	***	*****	*****	*****	*****
1	625	21.8	21.8	.0022	.0022
2	626	76.5	98.3	.0078	.0100
3	627	46.8	145.1	.0048	.0148
4	628	326.0	471.1	.0332	.0480
5	629	220.8	691.9	.0225	.0705
6	630	140.1	832.0	.0143	.0848
7	701	609.6	1441.6	.0621	.1470
8	702	1250.0	2691.6	.1274	.2744
9	703	586.0	3277.6	.0597	.3341
10	704	322.7	3600.3	.0329	.3670
11	705	260.0	3860.3	.0265	.3936
12	706	127.6	3987.8	.0130	.4066
13	707	683.4	4671.3	.0697	.4762
14	708	1353.0	6024.3	.1379	.6142
15	709	470.8	6495.1	.0480	.6622
16	710	404.9	6900.0	.0413	.7034
17	711	13.1	6913.1	.0013	.7048
18	712	58.7	6971.8	.0060	.7108
19	714	2837.0	9808.8	.2892	1.0000
MEAN,	12.98		VARIANCE,	24.65	N, 19

TABLE. UGASHIK . INSIDE TEST FISHERY, 1961
 (1) DAY NUMBER, (2) MONTH-DAY, (3) DAILY INDEX,
 (4) CUMULATIVE INDEX, (5) DAILY PROPORTION,
 (6) CUMULATIVE PROPORTION

(1)	(2)	(3)	(4)	(5)	(6)	
***	***	*****	*****	*****	*****	
1	630	407.4	407.4	.0341	.0341	
2	701	85.2	492.6	.0071	.0412	
3	702	176.4	669.0	.0148	.0560	
4	703	283.2	952.2	.0237	.0797	
5	704	455.4	1407.6	.0381	.1178	
6	705	172.8	1580.4	.0145	.1322	
7	706	340.2	1920.6	.0285	.1607	
8	707	308.4	2229.0	.0258	.1865	
9	708	525.6	2754.6	.0440	.2305	
10	709	842.4	3597.0	.0705	.3009	
11	710	545.4	4142.4	.0456	.3466	
12	711	1018.8	5161.2	.0852	.4318	
13	712	1412.4	6573.6	.1182	.5500	
14	713	1842.6	8416.2	.1542	.7041	
15	714	1296.6	9712.8	.1085	.8126	
16	715	1173.6	10886.4	.0982	.9108	
17	716	493.8	11380.2	.0413	.9521	
18	717	207.6	11587.8	.0174	.9695	
19	718	63.6	11651.4	.0053	.9748	
20	719	56.4	11707.8	.0047	.9795	
21	720	49.8	11757.6	.0042	.9837	
22	721	66.6	11824.2	.0056	.9893	
23	722	128.4	11952.6	.0107	1.0000	
MEAN,	12.06		VARIANCE,	19.48	N,	23

TABLE. UGASHIK . INSIDE TEST FISHERY, 1962
 (1) DAY NUMBER, (2) MONTH-DAY, (3) DAILY INDEX,
 (4) CUMULATIVE INDEX, (5) DAILY PROPORTION,
 (6) CUMULATIVE PROPORTION

(1)	(2)	(3)	(4)	(5)	(6)
***	***	*****	*****	*****	*****
1	625	37.8	37.8	.0022	.0022
2	626	84.6	122.4	.0050	.0072
3	627	190.2	312.6	.0112	.0184
4	628	197.4	510.0	.0116	.0300
5	629	352.2	862.2	.0207	.0507
6	630	674.4	1536.6	.0396	.0903
7	701	777.6	2314.2	.0457	.1360
8	702	1446.6	3760.8	.0850	.2210
9	703	1279.8	5040.6	.0752	.2962
10	704	1130.4	6171.0	.0664	.3626
11	705	896.4	7067.4	.0527	.4153
12	706	951.6	8019.0	.0559	.4712
13	707	1057.8	9076.8	.0622	.5334
14	708	1514.4	10591.2	.0890	.6224
15	709	1024.2	11615.4	.0602	.6826
16	710	1146.0	12761.4	.0673	.7499
17	711	861.0	13622.4	.0506	.8005
18	712	871.2	14493.6	.0512	.8517
19	713	475.8	14969.4	.0280	.8797
20	714	411.0	15380.4	.0242	.9038
21	715	465.0	15845.4	.0273	.9311
22	716	432.0	16277.4	.0254	.9565
23	717	322.8	16600.2	.0190	.9755
24	718	207.6	16807.8	.0122	.9877
25	719	77.4	16885.2	.0045	.9922
26	720	132.0	17017.2	.0078	1.0000

MEAN, 13.03 VARIANCE, 26.44 N, 26

TABLE. UGASHIK . INSIDE TEST FISHERY, 1963
 (1) DAY NUMBER, (2) MONTH-DAY, (3) DAILY INDEX,
 (4) CUMULATIVE INDEX, (5) DAILY PROPORTION,
 (6) CUMULATIVE PROPORTION

(1)	(2)	(3)	(4)	(5)	(6)
***	***	*****	*****	*****	*****
1	626	52.8	52.8	.0048	.0048
2	627	33.6	86.4	.0030	.0078
3	628	167.4	253.8	.0151	.0228
4	629	192.0	445.8	.0173	.0401
5	630	205.2	651.0	.0185	.0586
6	701	243.6	894.6	.0219	.0805
7	702	243.0	1137.6	.0219	.1024
8	703	581.4	1719.0	.0523	.1547
9	704	1144.8	2863.8	.1031	.2578
10	705	905.4	3769.2	.0815	.3393
11	706	468.6	4237.8	.0422	.3815
12	707	820.8	5058.6	.0739	.4554
13	708	642.0	5700.6	.0578	.5132
14	709	524.4	6225.0	.0472	.5604
15	710	789.6	7014.6	.0711	.6314
16	711	595.2	7609.8	.0536	.6850
17	712	955.2	8565.0	.0860	.7710
18	713	685.2	9250.2	.0617	.8327
19	714	967.2	10217.4	.0871	.9197
20	715	175.2	10392.6	.0158	.9355
21	716	487.8	10880.4	.0439	.9794
22	717	52.2	10932.6	.0047	.9841
23	718	73.2	11005.8	.0066	.9907
24	719	103.2	11109.0	.0093	1.0000
MEAN,	13.29		VARIANCE,	23.46	N, 24

TABLE. UGASHIK . INSIDE TEST FISHERY, 1964
 (1) DAY NUMBER, (2) MONTH-DAY, (3) DAILY INDEX,
 (4) CUMULATIVE INDEX, (5) DAILY PROPORTION,
 (6) CUMULATIVE PROPORTION

(1) ***	(2) ***	(3) *****	(4) *****	(5) *****	(6) *****
1	622	41.4	41.4	.0020	.0020
2	623	15.6	57.0	.0008	.0028
3	624	36.6	93.6	.0018	.0046
4	625	52.8	146.4	.0026	.0072
5	626	40.8	187.2	.0020	.0093
6	627	123.0	310.2	.0061	.0154
7	628	177.6	487.8	.0088	.0241
8	629	403.2	891.0	.0200	.0441
9	630	233.4	1124.4	.0116	.0557
10	701	461.4	1585.8	.0228	.0785
11	702	871.2	2457.0	.0431	.1216
12	703	414.0	2871.0	.0205	.1421
13	704	1452.6	4323.6	.0719	.2140
14	705	2602.8	6926.4	.1288	.3428
15	706	2623.8	9550.2	.1299	.4727
16	707	1453.2	11003.4	.0719	.5446
17	708	1351.2	12354.6	.0669	.6115
18	709	786.6	13141.2	.0389	.6504
19	710	898.8	14040.0	.0445	.6949
20	711	1000.8	15040.8	.0495	.7444
21	712	1239.6	16280.4	.0614	.8058
22	713	816.0	17096.4	.0404	.8462
23	714	865.2	17961.6	.0428	.8890
24	715	715.8	18677.4	.0354	.9244
25	716	494.4	19171.8	.0245	.9489
26	717	420.0	19591.8	.0208	.9697
27	718	360.0	19951.8	.0178	.9875
28	719	151.8	20103.6	.0075	.9950
29	720	69.0	20172.6	.0034	.9984
30	721	31.8	20204.4	.0016	1.0000
MEAN,	16.85		VARIANCE,	24.45	N, 30

TABLE. UGASHIK . INSIDE TEST FISHERY, 1965
 (1) DAY NUMBER, (2) MONTH-DAY, (3) DAILY INDEX,
 (4) CUMULATIVE INDEX, (5) DAILY PROPORTION,
 (6) CUMULATIVE PROPORTION

(1)	(2)	(3)	(4)	(5)	(6)
***	***	*****	*****	*****	*****
1	624	59.4	59.4	.0027	.0027
2	625	28.2	87.6	.0013	.0039
3	626	37.2	124.8	.0017	.0056
4	627	74.4	199.2	.0034	.0090
5	628	324.0	523.2	.0146	.0236
6	629	384.0	907.2	.0173	.0409
7	630	406.8	1314.0	.0183	.0592
8	701	309.6	1623.6	.0140	.0732
9	702	266.4	1890.0	.0120	.0852
10	703	566.4	2456.4	.0255	.1108
11	704	1537.2	3993.6	.0693	.1801
12	705	876.0	4869.6	.0395	.2196
13	706	787.2	5656.8	.0355	.2551
14	707	1132.8	6789.6	.0511	.3061
15	708	1376.4	8166.0	.0621	.3682
16	709	960.0	9126.0	.0433	.4115
17	710	2328.6	11454.6	.1050	.5165
18	711	1342.8	12797.4	.0605	.5770
19	712	1090.8	13888.2	.0492	.6262
20	713	1776.0	15664.2	.0801	.7063
21	714	790.8	16455.0	.0357	.7420
22	715	1528.2	17983.2	.0689	.8109
23	716	834.6	18817.8	.0376	.8485
24	717	720.6	19538.4	.0325	.8810
25	718	815.4	20353.8	.0368	.9178
26	719	757.8	21111.6	.0342	.9519
27	720	566.4	21678.0	.0255	.9775
28	721	364.2	22042.2	.0164	.9939
29	722	135.6	22177.8	.0061	1.0000

MEAN, 17.30

VARIANCE, 32.53

N, 29

TABLE. UGASHIK . INSIDE TEST FISHERY, 1966
 (1) DAY NUMBER, (2) MONTH-DAY, (3) DAILY INDEX,
 (4) CUMULATIVE INDEX, (5) DAILY PROPORTION,
 (6) CUMULATIVE PROPORTION

(1)	(2)	(3)	(4)	(5)	(6)	
***	***	*****	*****	*****	*****	
1	624	28.2	28.2	.0024	.0024	
2	625	20.4	48.6	.0018	.0042	
3	626	15.0	63.6	.0013	.0055	
4	627	127.2	190.8	.0110	.0165	
5	628	271.2	462.0	.0234	.0399	
6	629	123.0	585.0	.0106	.0505	
7	630	120.0	705.0	.0104	.0609	
8	701	352.2	1057.2	.0304	.0914	
9	702	169.8	1227.0	.0147	.1060	
10	703	478.2	1705.2	.0413	.1473	
11	704	646.8	2352.0	.0559	.2032	
12	705	1086.0	3438.0	.0938	.2971	
13	706	978.6	4416.6	.0846	.3816	
14	707	1089.0	5505.6	.0941	.4757	
15	708	1851.6	7357.2	.1600	.6357	
16	709	1109.4	8466.6	.0959	.7316	
17	710	166.2	8632.8	.0144	.7460	
18	711	501.0	9133.8	.0433	.7892	
19	712	1367.4	10501.2	.1182	.9074	
20	713	279.6	10780.8	.0242	.9316	
21	714	322.2	11103.0	.0278	.9594	
22	715	368.4	11471.4	.0318	.9912	
23	716	101.4	11572.8	.0088	1.0000	
MEAN,	14.43		VARIANCE,	17.21	N,	23

TABLE. UGASHIK . INSIDE TEST FISHERY, 1967
 (1) DAY NUMBER, (2) MONTH-DAY, (3) DAILY INDEX,
 (4) CUMULATIVE INDEX, (5) DAILY PROPORTION,
 (6) CUMULATIVE PROPORTION

(1)	(2)	(3)	(4)	(5)	(6)
***	***	*****	*****	*****	*****
1	626	168.6	168.6	.0295	.0295
2	627	238.8	407.4	.0417	.0712
3	628	172.8	580.2	.0302	.1014
4	629	357.0	937.2	.0624	.1638
5	630	2292.0	3229.2	.4007	.5645
6	701	658.8	3888.0	.1152	.6797
7	702	542.4	4430.4	.0948	.7745
8	703	21.0	4451.4	.0037	.7782
9	704	373.2	4824.6	.0652	.8434
10	705	530.4	5355.0	.0927	.9361
11	706	365.4	5720.4	.0639	1.0000
MEAN,	6.06		VARIANCE,	6.10	N, 11

TABLE. UGASHIK . INSIDE TEST FISHERY, 1968
 (1) DAY NUMBER, (2) MONTH-DAY, (3) DAILY INDEX,
 (4) CUMULATIVE INDEX, (5) DAILY PROPORTION,
 (6) CUMULATIVE PROPORTION

(1)	(2)	(3)	(4)	(5)	(6)
***	***	*****	*****	*****	*****
1	623	47.4	47.4	.0013	.0013
2	624	121.8	169.2	.0034	.0048
3	625	445.8	615.0	.0126	.0174
4	626	609.0	1224.0	.0172	.0345
5	627	1049.4	2273.4	.0296	.0642
6	628	1502.4	3775.8	.0424	.1066
7	629	1093.2	4869.0	.0309	.1374
8	630	794.4	5663.4	.0224	.1598
9	701	2304.0	7967.4	.0650	.2249
10	702	1226.4	9193.8	.0346	.2595
11	703	1627.2	10821.0	.0459	.3054
12	704	1698.0	12519.0	.0479	.3533
13	705	4120.2	16639.2	.1163	.4696
14	706	1773.6	18412.8	.0501	.5197
15	707	2953.2	21366.0	.0834	.6030
16	708	2145.6	23511.6	.0606	.6636
17	709	1558.8	25070.4	.0440	.7076
18	710	1900.8	26971.2	.0536	.7612
19	711	1485.0	28456.2	.0419	.8032
20	712	1324.8	29781.0	.0374	.8405
21	713	1626.0	31407.0	.0459	.8864
22	714	1371.6	32778.6	.0387	.9251
23	715	885.6	33664.2	.0250	.9501
24	716	561.6	34225.8	.0159	.9660
25	717	553.8	34779.6	.0156	.9816
26	718	651.0	35430.6	.0184	1.0000

MEAN, 14.25

VARIANCE, 31.08

N, 26

SECTION III. SUPPLEMENTARY SECTION

- Set 1. Port Moller Test Fishery, 1967-1973; 1975-1976.
- Set 2. Method for estimating daily and seasonal run size from Port Moller observations.

TABLE. PORT MOLR..OUTSIDE TEST FISHERY, 1967
 (1) DAY NUMBER, (2) MONTH-DAY, (3) DAILY INDEX,
 (4) CUMULATIVE INDEX, (5) DAILY PROPORTION,
 (6) CUMULATIVE PROPORTION

(1)	(2)	(3)	(4)	(5)	(6)
***	***	*****	*****	*****	*****
1	611	.00	.00	.0000	.0000
2	617	1.38	1.38	.0389	.0389
3	618	5.38	6.77	.1513	.1902
4	619	10.98	17.75	.3088	.4990
5	620	2.37	20.12	.0665	.5655
6	625	5.06	25.18	.1423	.7079
7	626	8.17	33.35	.2296	.9374
8	630	2.22	35.57	.0626	1.0000
MEAN,	5.06		VARIANCE,	2.88	N, 8

TABLE. PORT MOLR..OUTSIDE TEST FISHERY, 1968
 (1) DAY NUMBER, (2) MONTH-DAY, (3) DAILY INDEX,
 (4) CUMULATIVE INDEX, (5) DAILY PROPORTION,
 (6) CUMULATIVE PROPORTION

(1)	(2)	(3)	(4)	(5)	(6)
***	***	*****	*****	*****	*****
1	610	.58	.58	.0115	.0115
2	611	.00	.58	.0000	.0115
3	612	.00	.58	.0000	.0115
4	614	.35	.93	.0069	.0184
5	615	3.94	4.87	.0781	.0966
6	616	1.02	5.89	.0203	.1169
7	617	2.36	8.25	.0468	.1637
8	618	.67	8.92	.0133	.1770
9	619	.92	9.84	.0182	.1952
10	621	3.40	13.24	.0674	.2626
11	622	2.17	15.41	.0430	.3056
12	625	4.38	19.79	.0869	.3925
13	626	.16	19.95	.0033	.3958
14	627	2.25	22.20	.0447	.4405
15	628	4.63	26.83	.0918	.5323
16	629	2.30	29.13	.0456	.5779
17	630	9.64	38.77	.1912	.7692
18	701	4.70	43.47	.0932	.8624
19	702	2.11	45.58	.0419	.9043
20	705	.98	46.57	.0195	.9239
21	706	1.21	47.78	.0241	.9479
22	707	.29	48.07	.0057	.9537
23	708	.66	48.74	.0132	.9668
24	710	1.43	50.16	.0283	.9952
25	711	.24	50.41	.0048	1.0000

MEAN, 13.97

VARIANCE, 26.58

N, 25

TABLE. PORT MOLR., OUTSIDE TEST FISHERY, 1969
 (1) DAY NUMBER, (2) MONTH-DAY, (3) DAILY INDEX,
 (4) CUMULATIVE INDEX, (5) DAILY PROPORTION,
 (6) CUMULATIVE PROPORTION

(1)	(2)	(3)	(4)	(5)	(6)
***	***	*****	*****	*****	*****
1	612	.18	.18	.0017	.0017
2	613	2.89	3.07	.0280	.0297
3	614	.32	3.39	.0031	.0328
4	616	.21	3.60	.0020	.0348
5	619	.41	4.01	.0040	.0388
6	620	6.56	10.58	.0634	.1022
7	621	5.09	15.67	.0492	.1515
8	622	4.28	19.95	.0414	.1929
9	623	7.87	27.82	.0761	.2690
10	624	8.38	36.20	.0810	.3500
11	625	10.60	46.80	.1025	.4525
12	626	8.21	55.01	.0794	.5319
13	627	5.02	60.04	.0486	.5804
14	628	7.79	67.83	.0754	.6558
15	630	9.29	77.12	.0898	.7456
16	701	6.34	83.46	.0613	.8069
17	702	4.58	88.04	.0443	.8511
18	703	3.61	91.65	.0349	.8860
19	704	2.70	94.35	.0261	.9121
20	705	2.95	97.30	.0285	.9406
21	706	.76	98.05	.0073	.9479
22	707	2.47	100.53	.0239	.9719
23	708	1.34	101.87	.0130	.9849
24	709	1.57	103.44	.0151	1.0000
MEAN,	12.53		VARIANCE,	22.93	N, 24

TABLE. PORT MOLR., OUTSIDE TEST FISHERY, 1970
 (1) DAY NUMBER, (2) MONTH-DAY, (3) DAILY INDEX,
 (4) CUMULATIVE INDEX, (5) DAILY PROPORTION,
 (6) CUMULATIVE PROPORTION

(1)	(2)	(3)	(4)	(5)	(6)	
***	***	*****	*****	*****	*****	
1	611	.20	.20	.0015	.0015	
2	612	.70	.90	.0051	.0065	
3	613	.00	.90	.0000	.0065	
4	620	3.52	4.42	.0255	.0320	
5	621	9.86	14.28	.0715	.1036	
6	622	9.75	24.03	.0707	.1743	
7	623	4.96	28.99	.0360	.2103	
8	624	18.70	47.69	.1357	.3460	
9	625	11.30	58.99	.0820	.4279	
10	626	16.20	75.19	.1175	.5455	
11	627	12.82	88.01	.0930	.6385	
12	628	6.15	94.16	.0446	.6831	
13	629	9.95	104.11	.0722	.7553	
14	630	14.56	118.67	.1056	.8609	
15	702	4.38	123.05	.0318	.8927	
16	703	1.52	124.57	.0110	.9037	
17	704	3.20	127.77	.0232	.9269	
18	705	2.26	130.03	.0164	.9433	
19	706	7.26	137.29	.0527	.9960	
20	709	.00	137.29	.0000	.9960	
21	710	.55	137.84	.0040	1.0000	
MEAN,	10.55		VARIANCE,	15.67	N,	21

TABLE. PORT MOLR., OUTSIDE TEST FISHERY, 1971
 (1) DAY NUMBER, (2) MONTH-DAY, (3) DAILY INDEX,
 (4) CUMULATIVE INDEX, (5) DAILY PROPORTION,
 (6) CUMULATIVE PROPORTION

(1)	(2)	(3)	(4)	(5)	(6)	
***	***	*****	*****	*****	*****	
1	617	2.85	2.85	.0234	.0234	
2	618	.00	2.85	.0000	.0234	
3	619	.00	2.85	.0000	.0234	
4	621	3.45	6.30	.0283	.0517	
5	622	8.96	15.26	.0736	.1253	
6	623	2.32	17.58	.0191	.1444	
7	624	5.10	22.68	.0419	.1863	
8	625	.64	23.52	.0069	.1932	
9	626	13.68	37.19	.1123	.3055	
10	627	1.92	39.12	.0158	.3213	
11	628	.00	39.12	.0000	.3213	
12	703	3.22	42.34	.0265	.3477	
13	704	3.22	45.56	.0264	.3742	
14	705	17.52	63.09	.1439	.5181	
15	706	17.22	80.31	.1415	.6596	
16	707	22.20	102.51	.1823	.8419	
17	708	11.68	114.19	.0959	.9378	
18	709	2.10	116.29	.0172	.9550	
19	710	5.47	121.77	.0450	1.0000	
MEAN,	12.65		VARIANCE,	20.76	N,	19

TABLE. PORT MOLR..OUTSIDE TEST FISHERY, 1972
 (1) DAY NUMBER, (2) MONTH-DAY, (3) DAILY INDEX,
 (4) CUMULATIVE INDEX, (5) DAILY PROPORTION,
 (6) CUMULATIVE PROPORTION

(1)	(2)	(3)	(4)	(5)	(6)
***	***	*****	*****	*****	*****
1	621	.07	.07	.0153	.0153
2	622	1.34	1.42	.2884	.3038
3	626	.62	2.03	.1321	.4359
4	628	.25	2.28	.0537	.4895
5	629	.50	2.78	.1073	.5969
6	630	1.32	4.10	.2839	.8807
7	701	.56	4.66	.1193	1.0000
MEAN,	4.28		VARIANCE,	3.66	N, 7

TABLE. PORT MOLR., OUTSIDE TEST FISHERY, 1973
 (1) DAY NUMBER, (2) MONTH-DAY, (3) DAILY INDEX,
 (4) CUMULATIVE INDEX, (5) DAILY PROPORTION,
 (6) CUMULATIVE PROPORTION

(1)	(2)	(3)	(4)	(5)	(6)	
***	***	*****	*****	*****	*****	
1	614	8.60	8.60	.0253	.0253	
2	615	8.80	17.40	.0259	.0512	
3	616	8.90	26.30	.0262	.0774	
4	617	9.10	35.40	.0268	.1042	
5	618	9.50	44.90	.0280	.1322	
6	619	10.30	55.20	.0303	.1625	
7	620	9.30	64.50	.0274	.1899	
8	621	8.80	73.30	.0259	.2158	
9	622	8.30	81.60	.0244	.2403	
10	623	19.60	101.20	.0577	.2980	
11	624	19.70	120.90	.0580	.3560	
12	625	19.70	140.60	.0580	.4140	
13	626	18.10	158.70	.0533	.4673	
14	627	46.20	204.90	.1360	.6034	
15	628	42.50	247.40	.1251	.7285	
16	629	23.00	270.40	.0677	.7962	
17	630	3.50	273.90	.0103	.8065	
18	701	11.60	285.50	.0342	.8407	
19	702	12.20	297.70	.0359	.8766	
20	703	12.80	310.50	.0377	.9143	
21	704	14.00	324.50	.0412	.9555	
22	705	15.10	339.60	.0445	1.0000	
MEAN,	12.74		VARIANCE,	29.26	N,	22

TABLE. PORT MOLR..OUTSIDE TEST FISHERY, 1975
 (1) DAY NUMBER, (2) MONTH-DAY, (3) DAILY INDEX,
 (4) CUMULATIVE INDEX, (5) DAILY PROPORTION,
 (6) CUMULATIVE PROPORTION

(1)	(2)	(3)	(4)	(5)	(6)	
***	***	*****	*****	*****	*****	
1	613	1.00	1.00	.0011	.0011	
2	614	2.90	3.90	.0032	.0043	
3	615	4.70	8.60	.0051	.0094	
4	616	5.70	14.30	.0062	.0157	
5	617	22.50	36.80	.0246	.0403	
6	618	37.70	74.50	.0413	.0816	
7	619	11.20	85.70	.0123	.0939	
8	620	8.60	94.30	.0094	.1033	
9	621	17.60	111.90	.0193	.1225	
10	622	27.60	139.50	.0302	.1528	
11	623	37.60	177.10	.0412	.1939	
12	624	47.60	224.70	.0521	.2461	
13	625	57.60	282.30	.0631	.3091	
14	626	60.00	342.30	.0657	.3749	
15	628	60.85	403.15	.0666	.4415	
16	629	60.00	463.15	.0657	.5072	
17	630	60.00	523.15	.0657	.5729	
18	701	62.30	585.45	.0682	.6411	
19	702	60.20	645.65	.0659	.7071	
20	703	12.50	658.15	.0137	.7207	
21	704	57.40	715.55	.0629	.7836	
22	705	99.50	815.05	.1090	.8926	
23	706	33.10	848.15	.0362	.9288	
24	707	18.00	866.15	.0197	.9485	
25	708	47.00	913.15	.0515	1.0000	
MEAN,	16.11		VARIANCE,	29.98	N,	25

TABLE. PORT MOLR..OUTSIDE TEST FISHERY, 1976
 (1) DAY NUMBER, (2) MONTH-DAY, (3) DAILY INDEX,
 (4) CUMULATIVE INDEX, (5) DAILY PROPORTION,
 (6) CUMULATIVE PROPORTION

(1)	(2)	(3)	(4)	(5)	(6)
***	***	*****	*****	*****	*****
1	613	1.90	1.90	.0028	.0028
2	614	2.80	4.70	.0041	.0069
3	615	3.00	7.70	.0044	.0113
4	616	1.50	9.20	.0022	.0135
5	617	.00	9.20	.0000	.0135
6	618	1.50	10.70	.0022	.0157
7	619	16.30	27.00	.0239	.0397
8	620	3.90	30.90	.0057	.0454
9	621	26.70	57.60	.0392	.0846
10	622	10.00	67.60	.0147	.0993
11	623	21.40	89.00	.0314	.1308
12	624	23.40	112.40	.0344	.1651
13	625	18.80	131.20	.0276	.1928
14	626	33.10	164.30	.0486	.2414
15	627	19.20	183.50	.0282	.2696
16	628	31.70	215.20	.0466	.3162
17	629	111.60	326.80	.1640	.4802
18	630	57.50	384.30	.0845	.5646
19	701	28.10	412.40	.0413	.6059
20	702	18.60	431.00	.0273	.6333
21	703	21.50	452.50	.0316	.6649
22	704	48.90	501.40	.0718	.7367
23	705	62.50	563.90	.0918	.8285
24	706	58.10	622.00	.0854	.9139
25	707	26.20	648.20	.0385	.9524
26	708	32.40	680.60	.0476	1.0000
MEAN,	17.97		VARIANCE,	27.93	N, 26

METHODS FOR ESTIMATING DAILY AND SEASONAL RUN SIZE
FROM PORT MOLLER OBSERVATIONS

Let $Y(t)$ be the cumulative proportion of the run characteristic occurring on day of the run t . One appropriate form of a model describing $Y(t)$ is $(1 + \exp(-(a+bt)))^{-1}$, a two parameter inverted exponential. Using past records, nonlinear least squares technique will yield the estimate, \hat{Y} .

Given prior knowledge of the relation between the true total run characteristic, N , and the true total size of some attribute of interest, A , estimated mean passage, \hat{M} , is given by $(1/n) * \sum_{j=1}^n (A/N)_j$ where n is the total number of years of record or the total number of years in some stratum of all years of record. Given an initial estimate or guess, \hat{A}_0 , the total expected run characteristic for the year, \hat{N} , is \hat{A}_0 / \hat{M} .

Daily incoming observations on the run characteristic, O_i , are treated to yield $P(t) = (1/\hat{N}) * (\sum_{i=1}^t O_i)$ where $P(t)$ is the cumulative proportion of the run characteristic occurring on day t .

The next step is synchronization of $P(t)$ with $\hat{Y}(t)$. Choose t to satisfy $\min_t (\hat{Y}(t) - P(t))^2$. $P(t)$ then becomes $O(t)$ and the following observation is $O(t+1)$ and so forth up to approximately five observations. At and beyond five observations, re-synchronization is accomplished by finding st to satisfy $\min_{st} (\min_t (\hat{Y}(t) - P(t+st))^2)$ for all integers such that $t + st$ is greater than zero. Once the minimum has been located, all values of $P(t)$ become $P(t+st)$. Note that st may be less than zero.

After synchronization, the estimate of the attribute of interest on day of the run i , \hat{A}_i , is $(P(i)/\hat{Y}(i)) * \hat{M}$.

Assuming that proper care has been taken in the selection of the data base for \hat{Y} , severe deviations of $P(t)$ from $\hat{Y}(t)$ are due to poor estimates of either A_0 or M . Error in the estimation of M will become obvious from data which originates at a point removed in time and space from the run characteristic from which M has been computed, e.g., catch, aerial survey, escapement (*see* below). Hence it is possible to detect and correct errors in \hat{M} during the course of the season. When \hat{M} is secure, large deviations from expected indicate that the initial estimate of the attribute of

interest is inaccurate. The accuracy of the estimate of A_0 can be improved by selecting \hat{A}'_0 to satisfy $\min_t(\min(Y(t) - P(t))^2)$. A new \hat{N}, \hat{N}' is then defined as \hat{A}'_0/\hat{M} and the process of the daily estimation of the A_i continues.

So far the outline has been limited to a description of the means of estimating the total magnitude of some A . The first derivative of $Y(t)$, say $y(t)$, is useful in providing estimates of the daily magnitude of some attribute of interest, \hat{a}_i . Assuming that the estimates of the a_i are taken from a run characteristic which is measured several days in advance of the time when the attribute may be more accurately determined, the apparent accuracy of the estimates of the a_i may be used to ascertain the accuracy of the estimate of A before the run characteristic upon which \hat{A} was based has ceased to exist. The interaction of estimates of the same attribute made at different points in time and space is more easily grasped by means of example. Suppose that total run size is the attribute of interest and that the estimate of this attribute was made on the run characteristic, standardized catch at Port Scylla. Port Scylla is several days fish swimming time from the target estuary, Charybdis Bay. The description of $Y(t)$ which treats total run size also defines $y(t)$ which is used to treat daily run size. $y(t)$, as observed at Port Scylla, should be realized in Charybdis Bay on day $t+k$. (Although k is roughly constant within one season, k behaves as a random variable from year to year.) Daily run size estimates in the estuary can be made independently of y by combining daily catch with allocated escapement. Suppose there is a consistent positive bias in daily density estimated at Port Scylla as compared to daily density estimated by combining catch in the Bay with escapement. This would indicate that M was initially estimated too low. Assuming that daily density is more accurately determined in the estuary, \hat{M} is adjusted to that value which causes the daily Port Scylla estimates to most closely correspond to the Charybdis Bay estimates. The new estimate of M , when returned to the system of estimation at Port Scylla, will yield a new, more accurate estimate of A , total run size.

SECTION IV. SUPPLEMENTARY TABLES

Set 1. Naknek-Kvichak District Outside Test Fishery.

Set 2. Egegik District Outside Test Fishery.

TABLE. NAK-KVI .OUTSIDE TEST FISHERY, 1976
 (1) DAY NUMBER, (2) MONTH-DAY, (3) DAILY INDEX,
 (4) CUMULATIVE INDEX, (5) DAILY PROPORTION,
 (6) CUMULATIVE PROPORTION

(1)	(2)	(3)	(4)	(5)	(6)
***	***	*****	*****	*****	*****
1	628	.0	.0	.0000	.0000
2	701	104.1	104.1	.0750	.0750
3	702	254.3	358.3	.1833	.2584
4	704	88.8	447.1	.0640	.3224
5	707	48.0	495.1	.0346	.3570
6	708	153.1	648.3	.1104	.4674
7	709	738.7	1386.9	.5326	1.0000
MEAN,	5.52		VARIANCE,	3.44	N, 7

TABLE. EGEKIK .OUTSIDE TEST FISHERY, 1976
 (1) DAY NUMBER, (2) MONTH-DAY, (3) DAILY INDEX,
 (4) CUMULATIVE INDEX, (5) DAILY PROPORTION,
 (6) CUMULATIVE PROPORTION

(1)	(2)	(3)	(4)	(5)	(6)
***	***	*****	*****	*****	*****
1	627	25.1	25.1	.0049	.0049
2	630	424.8	450.0	.0827	.0876
3	702	1104.0	1554.0	.2149	.3025
4	705	708.5	2262.5	.1379	.4404
5	707	996.9	3259.4	.1941	.6345
6	708	1877.7	5137.1	.3655	1.0000
MEAN,	4.53		VARIANCE,	1.96	N, 6