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A BRISTOL BAY ALMANAC FOR 1996

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Approved

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Director

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KEY WORDS

Bristol Bay, forecasts, Port Moller, chum salmon, *Oncorhynchus* spp., sockeye salmon

INTRODUCTION

The purpose of these daily summaries is to provide Bristol Bay processors with the statistics to forecast the total sockeye salmon (*Oncorhynchus nerka*) run in 1996 from the Port Moller index catches starting on June 20 (the earliest that forecasts are feasible) and ending on July 7 (the recent midpoint in the Bristol Bay catch). Also, by using the daily Alaska Department of Fish and Game (ADFG) summaries of the cumulative catches and escapements, processors can compare the daily 1996 numbers through July 10 with averages and ranges from recent past years (1985–95).

PORT MOLLER TEST BOAT

The test boat attempts to fish each day at 4 stations located along a transect line between Port Moller and Cape Newenham. The stations, 2 to 8, are located 33, 43, 53, and 63 mi out from Port Moller (13, 23, 33, and 43 mi from the coastline). An index catch at each of the four stations is the number caught per 100 fm per 60 min. A 200-fm net is usually fished for ~60 min, so the station index is usually about one-half of the actual catch. In past years, the daily index was the sum of the index catches at the four stations and the cumulative index (used to forecast) was the sum of the daily indices starting with June 11. In 1995, salmon were distributed well offshore, with the largest catches made at station 8 (43 mi from the coastline). This unusual distribution resulted in under-forecasting the run in 1995 because in past years salmon were usually concentrated at stations 4 or 6.

A new daily index has been calculated to account for the fact that salmon may be distributed farther out from station 8 than inside station 2. The new daily index gives the catch at station 8 twice the weight of catches made at the other stations. Therefore, we will add catches at stations 2, 4, 6, and 2 times the catch at station 8. This sum will be divided by 5 and then multiplied by 4 (or the sum multiplied by 0.8) to obtain a daily index catch. The daily index catches will be added each day beginning June 11 to calculate the cumulative indices that are used to forecast the final run. The daily and cumulative indices are given in Tables 1 and 2.

The new daily indices differ very little from the past indicies. The new daily index is related to the old daily index in the following way: if the index catch at station 8 is the same as the average index at the other three stations, the new index is the same as the old; if the station 8 index is lower than the average of the other stations, the new index is lower than the old; and if the station 8 index is higher than the average of the other stations, then the new daily index is higher than the old index.

Daily water temperatures off Port Moller are given in Table 3. The timing of the Bristol Bay runs (especially from Port Moller to the Bay) is usually related to temperature in the Bering Sea and North Pacific, with fish swimming faster or starting their migrations earlier at warmer temperatures, and slower or later at colder temperatures; however, there have been years with average timing when temperatures were either warm (>8°C) or cold (<5°C) at Port Moller.

About June 20, we will have a forecast of run timing based on an analysis by Natural Resources Consultants (Seattle, Washington) of ocean temperatures in the North Pacific. Spacial and temporal distribution off Port Moller can be examined from index catches of sockeye and chum (*O. keta*) salmon by station and 5-d periods (Tables 4 and 5).

An early indication of the ocean age composition in the Port Moller catches can be obtained from the average lengths of the fish that are reported daily (scales take longer to be aged). Usually if the average length is >550 mm, the majority of the sockeye salmon are 3-ocean fish, and if they are <550 mm, they are mostly 2-ocean fish (Fig. 1). However, in 1990–92 and 1994, the 3-ocean fish were very small because ocean growth was poor, and average lengths as low as 535 mm were still associated with a majority of 3-ocean fish in the Port Moller catch. When the Port Moller scales are aged, we can then estimate the age composition in the Bristol Bay run (Fig. 2). Because of net selectivity, there is not a 1:1 relationship in ocean age between Port Moller catches and the Bristol Bay run. When high percentages of 3-ocean fish occur at Port Moller, we can expect lower percentages in Bristol Bay (e.g. when 75% of the fish caught at Port Moller are 3-ocean, we would expect only 60% 3-ocean in the Bristol Bay run).

BRISTOL BAY RUNS

The daily commercial catches and the escapements at towers for 1993, 94 and 95 are shown in Figures 3 and 4 to illustrate the range in run timing. In a typical year with a large run (1995), large numbers of sockeye salmon are first present in the fishing districts between 25 and 30 June, but they have shown up as early as 21 June (1993) or as late as 2 July (1994). The daily catches in Bristol Bay (all districts) and the dates on which 50% of the seasons catch were made are given in Table 6. This date is usually 1 to 2 days later than the midpoint in the run and is affected by run timing (early in '79 and '93 and late in '86 and '94), strikes ('80 and '91), or management (restricted early fishing in '87).

The 1996 preseason forecasts are given in Table 7. Over half of the large forecasted run is expected to be ages 2.2 and 1.3 from the 1991 brood year, and most of these are expected to be bound for the Egegik and Kvichak systems. An early indication of the Bristol Bay run magnitude may come from the False Pass fishery (Table 8). There is a good correlation between the South Unimak catch and the Bristol Bay run if the 1990, 1994, and 1995 data are excluded (the same years that are outliers in the Port Moller/Bristol Bay data). If the Bristol Bay run is going to be ~44 million as forecasted, then the South Unimak catch through 20 June should exceed 0.6 million, and through 25 June the catch should exceed 1.2 million.

DAILY ALMANAC

The ensuing 21 daily summaries provide the following: (1) the average cumulative catches and escapements through midnight of the date shown and the average and range in the percentages of the season totals that were reached by that date for 1985–95; (2) the average and range in the

daily and cumulative Port Moller index catches for 1985, 1987–95 for comparison with 1996; (3) a plot of the past Bristol Bay runs on the cumulative indices through the date shown and the predictive equation (through July 7); and (4) Port Moller, fishery, and escapement comments. The 1990 run was unusual in that it was a very large run that started late, had a very concentrated peak, and then ended as usual; the 1994 run was late throughout. In those years, the False Pass fishery had difficulty catching their quota because the fish were not distributed in a typical manner. The 1990 and '94 data points in our predictive equations were thus considered outliers (excluded from calculations) for predictions through June 27 (midpoint at Port Moller). The years 1990 and '94 are shown as open circles on the graphs.

FIGURES

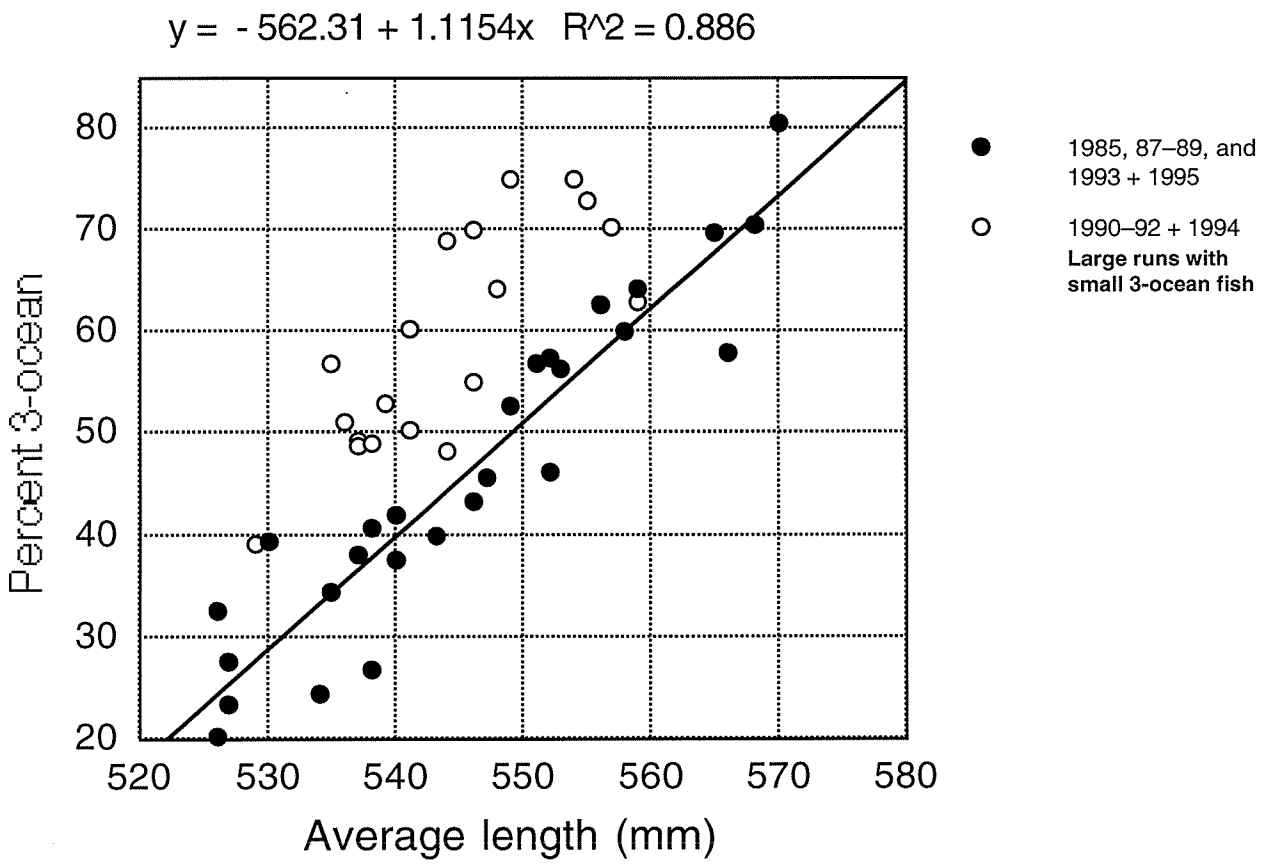

Figure 1. Correlation between ocean age (percent 3-ocean) and the average length of sockeye salmon off Port Moller (each year is represented by 4–5 data points or 5-d averages).

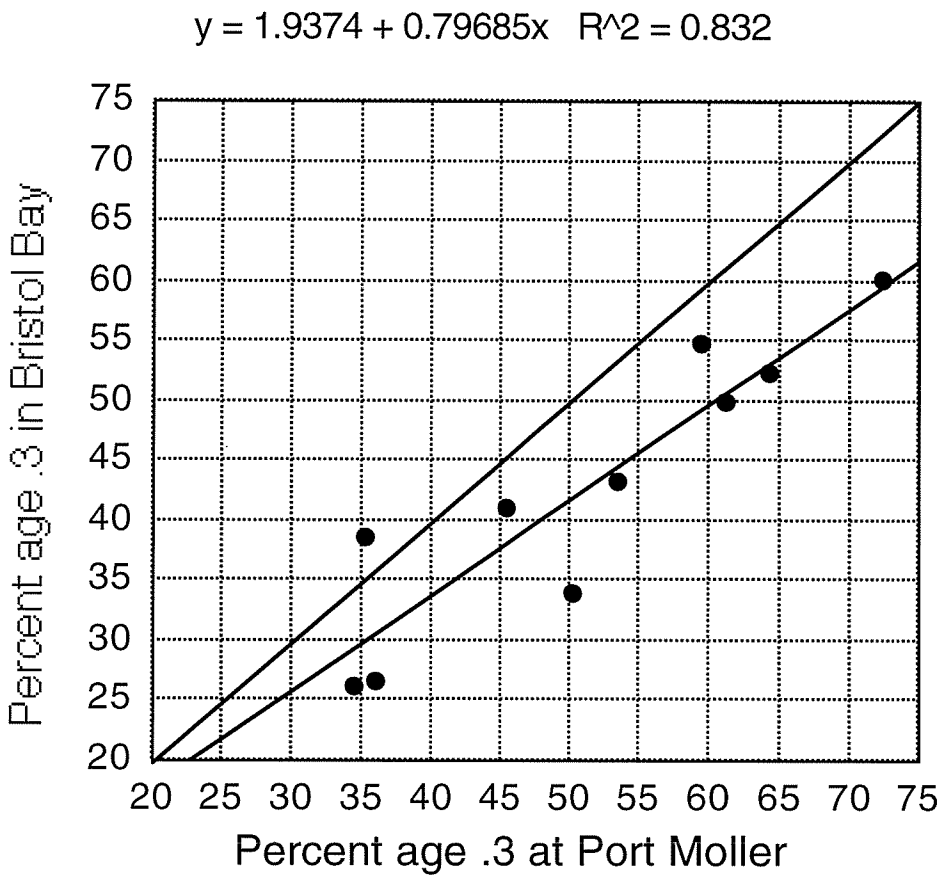

Figure 2. Correlation in the percent 3-ocean fish between Bristol Bay and Port Moller.

TABLES

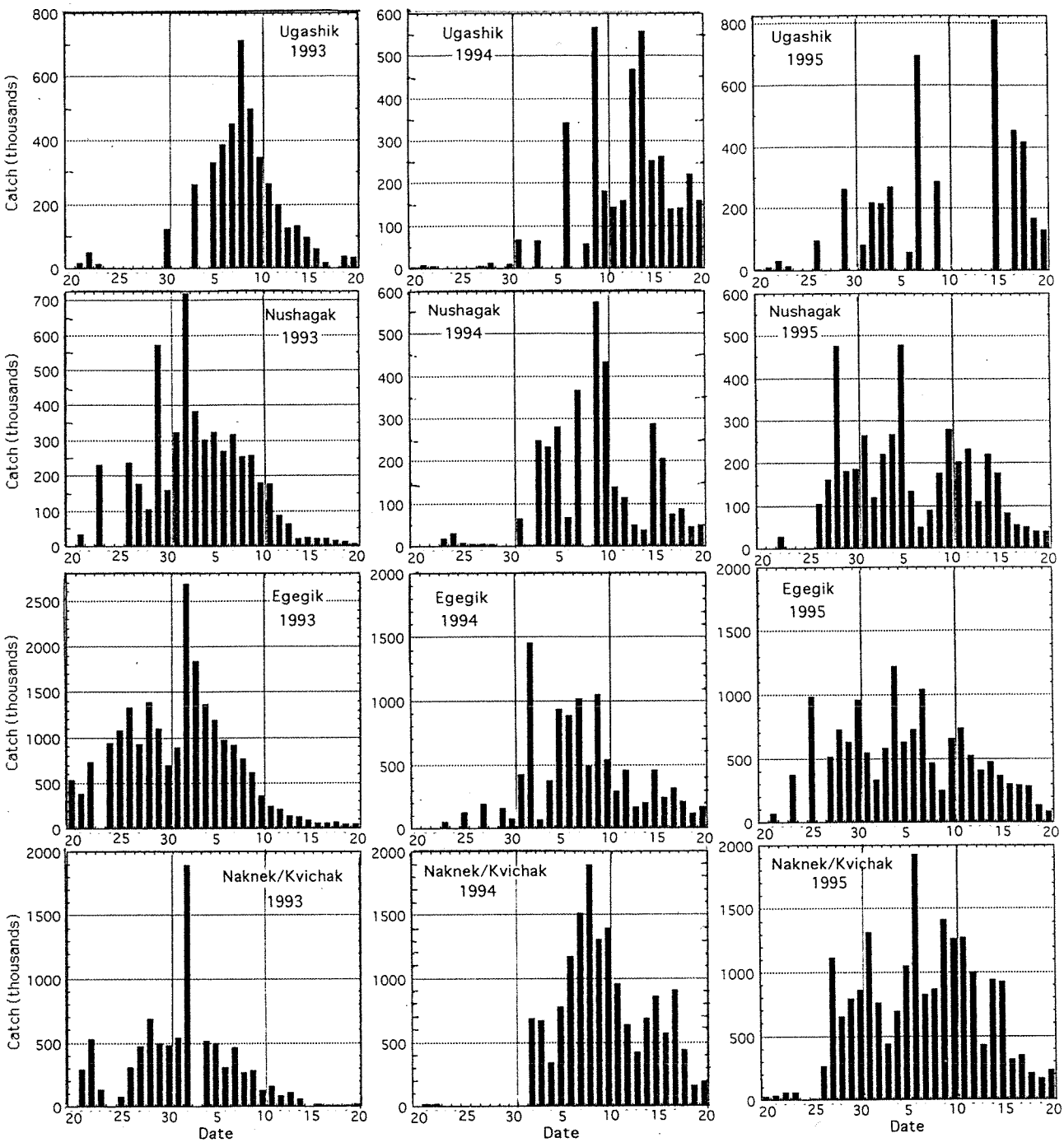

Figure 3. Daily sockeye salmon catches during 20 June to 20 July in 1993, 94, and 95.

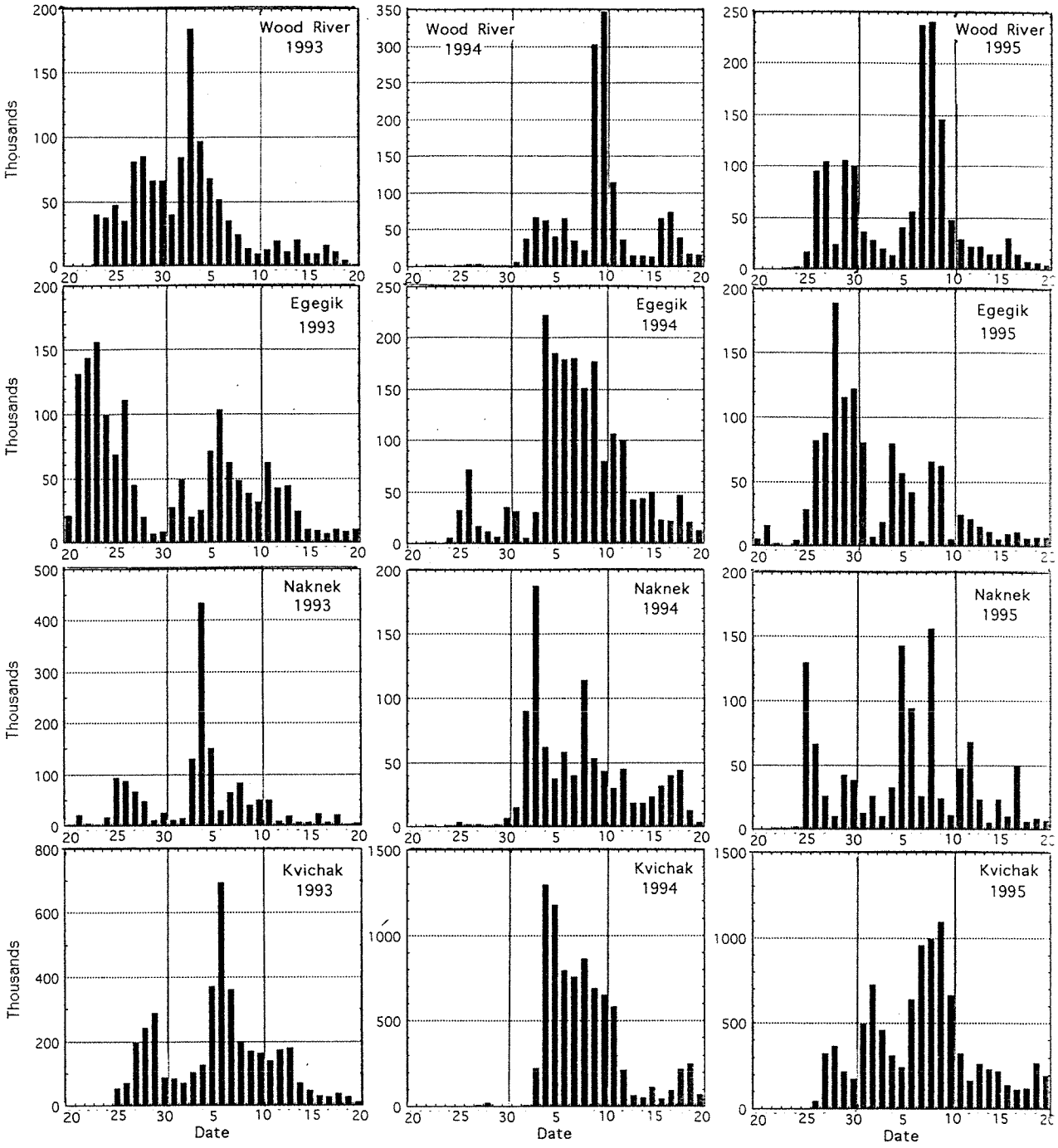

Figure 4. Daily sockeye salmon escapements during 20 June to 20 July in 1993, 94, and 95.

Table 1. Port Moller daily sockeye index catches (totals for stations, 2, 4, 6, and 8 with station 8 given double weight).

Date	1996 index	Past index catches									
		1995	1994	1993	1992	1991	1990	1989	1988	1987	1985
6/11			4	18	18	6	7	17	7		8
12		29	3	11		7	12	26	9		5
13		38	5	28		6		23		7	16
14		87	9	89	20	6	11	18		8	23
15		62	17	62	46	17	18	26	15	14	39
16		89	17	85	54			26	18		51
17		63	10		6	40	16	57	9		102
18		152	35		114	58	43	102	7	10	40
19		137	45	91	132	81			6	14	39
20		73	37	118	112	60			19	52	21
21		116		144	118				15	14	55
22		97	110	188	124	157	46	94	26	71	81
23		135	152	122	144	96	62	89		74	73
24		105		100	141	180	137		50		
25		142	95	232		54	154	57	22		21
26		153	111		48	55	106	28	51	138	80
27		124	141		108	131	137			61	54
28		182	149	190	120	68	284	118	33	140	175
29		217	135	112	133	95	197		85		162
30		146	260	287	226	20	243		51	73	170
7/1		187	161		170	79	173	94		26	28
2		172	167	242	85	50	155	94		27	44
3		188	123	60	162	174	223	118	23	33	78
4		149	197	79		66	101	195	22		76
5		122		100		127	62		48		98
6		182	146	81	103	67		137	23		94
7		106	107	74	64	56		108	39		
8		53	105	33	120	69					
9		89	54	62	43	87					
10				35							
Run (millions)		61	50	52	45	42	48	44	23	27	36

Table 2. Daily cumulative sockeye index catches off Port Moller.

DATE	1996 Index	Past index catches 1995	1994	1993	1992	1991	1990	1989	1988	1987	1985
6/11		33	4	18	18	6	7	17	7	8	8
12		62	7	29	37	13	19	43	16	15	13
13		99	12	57	56	19	32	67	28	22	28
14		186	21	146	76	25	43	85	40	30	51
15		248	38	208	122	42	61	111	56	43	91
16		337	55	293	176	66	84	137	74	53	142
17		400	66	382	182	106	100	194	82	61	244
18		552	101	472	296	164	143	297	89	71	284
19		689	146	562	428	245	184	380	95	85	323
20		762	183	681	540	305	225	468	114	138	343
21		878	269	824	658	404	267	550	128	151	398
22		975	379	1012	783	561	313	644	154	223	479
23		1110	531	1135	927	657	374	733	181	296	553
24		1214	648	1234	1068	837	511	799	231	383	616
25		1356	743	1466	1178	891	665	857	253	469	637
26		1509	854	1624	1226	946	771	885	305	607	717
27		1633	995	1783	1334	1077	908	955	353	668	771
28		1815	1144	1973	1453	1146	1192	1072	386	808	947
29		2033	1279	2085	1586	1241	1389	1166	472	883	1109
30		2179	1538	2372	1812	1261	1632	1261	523	956	1279
7/1		2365	1699	2547	1981	1340	1804	1354	568	983	1307
2		2537	1866	2789	2066	1390	1960	1448	614	1010	1351
3		2725	1990	2849	2228	1564	2182	1566	637	1043	1429
4		2874	2187	2928	2333	1629	2284	1761	659	1073	1505
5		2995	2330	3028	2443	1756	2345	1901	707	1104	1603
6		3177	2476	3109	2546	1823	2406	2038	730	1135	1697
7		3283	2583	3183	2610	1878		2147	769		
8		3336	2689	3216	2730	1947					
9		3424	2742	3278	2773	2034					
10				3313							
Run, excl. jacks		61	50	52	45	42	48	44	23	27	36

Cumulative indices include estimates for missing days (average of 2 days before and 2 days after the missing day or days).

Table 3. Surface water temperatures (°C) off Port Moller (stations 1–9, 1981–84; and 2, 4, 6, and 8, 1985+).

Date	81	82	83	84	85	87	88	89	90	91	92	93	94	95	96
6/11	9.3	4.2	8.8		5.0	5.9	8.4	4.4	6.6	4.5	7.1	7.2	7.2		
12	10.1	4.7	8.5	8.7	3.8	5.4	8.1	4.8	6.7	4.9	6.5	6.9	7.0	7.2	
13	10.6	5.8	8.8	8.1	4.1	4.9	7.5	5.0	6.0	4.7	6.5	7.3	6.2	6.8	
14	10.5	5.6	9.1	7.9	4.1	5.0	7.5	5.3	5.2	4.6	5.9	7.7	5.7	6.8	
15	10.2	5.8	9.4	8.0	5.0	5.0	7.0	6.2	5.8	4.6	5.5	8.0	6.1	6.9	
16	9.8	6.3	9.2	8.5	5.0	4.9	6.8	5.9	6.3	3.8	7.2	7.4	5.6	6.9	
17	9.5	6.9	9.2	9.1	6.1	4.8	6.8	7.2	6.8	4.0	7.1	7.3	5.4	7.1	
18	10.3	6.4	9.3	9.3	5.8	4.7	6.9	7.3	7.4	4.5	7.4	7.2	6.3	6.9	
19	10.1	6.7	9.3	9.8	5.4	5.0	7.2	7.1	7.4	5.0	8.3	7.1	6.9	6.7	
20	10.0	6.5	9.3	9.8	6.0	4.9	7.2	6.7	7.1	5.0	8.3	7.5	6.6	7.2	
21	10.0	6.3	9.3	10.0	6.1	5.1	7.4	6.4	6.8	5.0	9.2	8.4	6.8	6.9	
22	10.0	6.2	9.4	9.8	5.9	5.2	7.0	6.4	6.8	5.0	8.5	8.0	7.1	6.6	
23	10.1	5.9	9.4	9.5	6.0	5.2	6.9	5.9	7.4	4.9	8.2	8.3	7.1	6.8	
24	10.4	5.8	9.4	9.0	5.6	5.4	6.8	5.7	7.0	6.5	9.1	8.6	6.5	7.2	
25	10.4	6.6	9.7	8.9	5.3	5.8	6.9	5.6	6.9	6.0	8.3	9.2	5.9	7.3	
26	10.5	6.9	9.1	9.1	5.5	6.2	6.7	5.8	6.9	6.4	7.5	8.4	6.0	8.4	
27	10.9	6.8	8.7	8.9	5.8	6.7	7.0	6.4	7.3	6.0	7.6	8.3	6.8	7.4	
28	10.5	6.3	9.2	9.3	6.6	7.0	7.2	6.9	7.3	5.9	7.8	7.5	6.8	7.0	
29	10.4	6.0	9.2	9.3	7.1	6.6	8.0	6.1	7.8	5.6	7.9	7.7	7.1	7.4	
30	10.3	6.2	9.7	9.2	7.3	6.1	7.9	6.1	8.5	5.8	8.0	7.7	7.6	7.9	
7/01	10.0	6.6	10.0	9.8	6.9	6.0	7.9	5.4	8.8	5.1	7.8	7.6	6.9	7.6	
2	9.9	6.1	10.4	10.4	6.6	6.7	7.9	6.5	9.3	5.8	7.6	7.4	7.0	7.9	
3	9.9	5.8	10.5	10.6	6.8	6.8	8.0	7.7	9.1	5.9	7.9	7.5	7.0	7.8	
4	10.0	5.6	10.8	10.4	6.9		8.9	8.6	8.7	7.0	7.2	7.6	6.9	7.9	
5					7.0		8.4		9.0	7.1	6.5	7.6	6.6	7.6	
6										8.1	7.0	8.0	6.2	7.9	
7										8.8	7.2	8.2	6.9	7.9	
8										9.7	7.8	8.8	7.1	7.6	
9										8.9	8.5	9.1	7.2	7.4	
10												9.4			

Table 4. Average sockeye salmon catch off Port Moller by station and 5-d period; number caught by 100 fm (5-in mesh) fished for 1 h. Stations 2–8 are 33, 43, 53, and 63 mi from Port Moller, or 13, 23, 33, and 43 mi from the coastline.

	Station						Station				
Year/dates	2	4	6	8	Means	Year/dates	2	4	6	8	Means
1985						1991					
6/11-15	4	8	7	2	5	6/11-15	2	5	1	1	2
16-20	4	26	25	4	15	16-20	14	16	21	7	15
21-25	7	27	17	10	15	21-25	15	24	36	39	29
26-30	48	64	20	14	37	26-30	26	32	22	6	22
7/1-5	29	24	9	9	18	7/1-5	33	35	32	12	28
6	4	49	36	14	26	6-9	17	24	29	8	20
Mean-7/5	18	30	16	8	18	Mean-7/5	21	22	22	13	19
1987						1992					
6/11-15	1	3	6	1	3	6/11-15	1	2	5	11	5
16-20	7	18	3	2	8	16-20	10	15	21	29	19
21-25	24	15	20	4	16	21-25	13	26	28	46	28
26-30	7	40	47	18	28	26-30	11	29	43	38	30
7/1-5	4	10	7	8	7	7/1-5	10	55	42	25	33
Mean-7/5	9	17	17	7	12	6-9	3	33	41	13	22
1988						1993					
6/11-15	0	2	4	3	2	6/11-15	3	6	17	13	10
16-20	1	3	9	1	4	16-20	5	14	38	30	22
21-25	11	15	8	1	9	21-25	29	35	45	44	38
26-30	10	22	21	8	15	26-30	28	37	42	60	42
7/1-5	9	17	8	2	9	7/1-5	24	30	40	35	32
6-7	2	18	12	4	9	6-9	16	29	17	8	17
Mean-7/5	6	12	10	3	8	Mean-7/5	18	24	36	36	29
1989						1994					
6/11-15	8	8	9	1	7	6/11-15	3	3	2	0	2
16-20	12	12	16	19	15	16-20	2	13	13	4	8
21-25	14	22	27	19	21	21-25	32	30	27	18	27
26-30	14	17	29	16	19	26-30	14	31	51	52	37
7/1-5	19	50	23	32	31	7/1-5	30	51	43	37	40
6-7	32	47	16	29	31	6-9	11	31	37	25	26
Mean-7/5	13	22	21	17	18	Mean-7/5	16	26	27	22	23
1990						1995					
6/11-15	2	5	6	1	4	6/11-15	1	7	17	19	11
16-20	5	12	13	4	9	16-20	1	4	36	44	21
21-25	8	45	39	16	27	21-25	2	6	39	51	24
26-30	35	96	60	25	54	26-30	10	14	51	65	35
7/1-5	53	46	43	18	40	7/1-5	24	31	41	54	38
						6-9	11	35	26	31	26
Mean-7/5	21	41	32	13	27	Mean-7/5	8	12	37	47	26

Table 5. Average chum salmon catch off Port Moller by station and 5-d period; number caught by 100 fm (5-in mesh) fished for 1 h. Stations 2–8 are 33, 43, 53, and 63 mi from Port Moller, or 13, 23, 33, and 43 mi from the coastline.

	Station						Station				
Year/dates	2	4	6	8	Means	Year/dates	2	4	6	8	Means
1985						1991					
6/11-15	0.1	0.2	0.9	0.5	0.4	6/11-15	0.2	1.8	0.6	1.1	0.9
16-20	0.2	0.5	1.5	1.0	0.8	16-20	0.8	1.0	5.5	1.7	2.3
21-25	0.0	0.2	0.2	1.4	0.5	21-25	0.2	0.4	1.3	1.5	0.9
26-30	1.3	0.7	0.6	2.7	1.3	26-30	1.6	1.6	0.6	1.1	1.2
7/1-5	1.0	0.8	0.3	1.6	0.9	7/1-5	1.5	3.4	3.2	3.1	2.8
6	0.0	4.4	5.4	2.9	3.2	6-9	0.6	2.0	3.2	4.4	2.6
Mean-7/5	0.5	0.5	0.7	1.4	0.8	Mean-7/5	0.9	1.6	2.2	1.7	1.6
1987						1992					
6/11-15	0.0	0.6	0.2	0.3	0.3	6/11-15	0.3	0.0	1.9	2.2	1.1
16-20	0.3	0.8	1.5	0.2	0.7	16-20	0.0	0.6	1.3	5.5	1.9
21-25	0.6	0.7	3.3	1.9	1.6	21-25	0.4	1.1	2.4	1.3	1.3
26-30	0.1	0.8	1.2	1.4	0.9	26-30	1.3	1.6	1.8	2.7	1.9
7/1-5	0.1	0.0	0.7	0.5	0.3	7/1-5	1.9	1.3	1.0	0.6	1.2
						6-9	0.7	2.7	2.9	0.4	1.7
Mean-7/5	0.2	0.6	1.4	0.9	0.8	Mean-7/5	0.8	0.9	1.7	2.5	1.5
1988						1993					
6/11-15	0.0	0.1	1.2	0.6	0.5	6/11-15	0.3	0.5	2.0	0.6	0.8
16-20	0.2	0.5	0.9	0.4	0.5	16-20	0.0	0.3	1.9	1.1	0.8
21-25	0.7	2.0	1.4	0.8	1.2	21-25	0.7	0.1	0.8	0.6	0.6
26-30	0.7	3.7	2.1	2.0	2.1	26-30	1.5	0.5	1.9	7.2	2.8
7/1-5	0.6	2.8	1.3	1.4	1.5	7/1-5	1.3	1.4	0.9	1.5	1.3
6-7	0.5	1.6	0.7	5.1	2.0	6-9	2.2	4.1	1.9	1.0	2.3
Mean-7/5	0.4	1.8	1.4	1.0	1.2	Mean-7/5	0.8	0.6	1.5	2.2	1.3
1989						1994					
6/11-15	0.2	0.4	0.7	0.5	0.5	6/11-15	0.9	0.5	4.9	0.7	1.8
16-20	0.1	0.4	0.8	1.2	0.6	16-20	0.9	2.3	3.7	1.3	2.1
21-25	0.7	0.7	1.2	1.9	1.1	21-25	0.9	2.4	4.4	1.5	2.3
26-30	0.7	0.9	0.3	1.9	1.0	26-30	0.8	0.3	1.1	0.9	0.8
7/1-5	0.9	2.3	0.5	1.8	1.4	7/1-5	0.5	1.2	2.1	1.6	1.4
6-7	0.9	1.0	0.2	3.8	1.5	6-9	0.4	0.9	0.4	0.8	0.6
Mean-7/5	0.5	0.9	0.7	1.5	0.9	Mean-7/5	0.8	1.3	3.2	1.2	1.7
1990						1995					
6/11-15	0.1	0.4	1.4	0.8	0.7	6/11-15	0.1	0.5	1.7	0.8	0.8
16-20	0.1	0.5	3.3	1.0	1.2	16-20	0.4	0.4	1.0	0.9	0.7
21-25	0.1	0.5	2.3	1.0	1.0	21-25	0.0	0.7	0.5	1.7	0.7
26-30	0.4	1.1	4.4	2.6	2.1	26-30	0.3	0.4	1.4	1.7	1.0
7/1-5	1.2	2.1	2.3	1.1	1.7	7/1-5	0.4	0.1	0.1	0.9	0.4
						6-9	0.4	0.4	0.1	1.2	0.5
Mean-7/5	0.4	0.9	2.7	1.3	1.3	Mean-7/5	0.2	0.4	0.8	1.2	0.7

Table 6. Daily sockeye salmon catches in Bristol Bay (millions). [ ] = 50% of cumulative catch.

Date	1979	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95
-6/23	1.0	.1	.8	.2	.7	.9	.7	.2	.3	1.5	1.5	.3	.1	.6	3.1	.1	.8
24	.2	.1	.2	.1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.9	.0	.0
25	.3	.0	.5	.1	.0	.2	.0	.0	.2	.0	.2	.0	.0	.7	1.2	.1	1.0
26	.4	.1	.5	.2	.4	1.0	.0	.0	.0	.1	.7	.0	.0	.0	1.9	.0	.5
27	.2	.1	.5	.3	2.4	.2	1.0	.0	.6	.9	.1	.0	.0	1.0	1.6	.2	1.8
28	1.5	.1	.6	.5	.8	.0	1.1	.1	.0	.2	1.2	.1	.0	.0	2.2	.0	1.9
29	1.8	.2	.2	.7	1.4	.9	1.8	.0	.4	.9	1.8	1.1	.0	.5	2.2	.2	1.9
30	1.6	.3	2.0	.7	2.8	1.0	2.9	.0	1.1	.0	.9	1.0	.6	1.4	1.5	.1	2.0
7/1	1.1	.4	1.5	.4	1.7	1.6	.4	.3	.2	1.7	.7	.4	1.7	.8	1.8	.6	2.2
2	1.3	.3	1.0	.5	2.1	1.2	1.9	.8	1.1	.5	3.0	2.1	1.7	.7	5.3	2.1	1.4
3	1.3	1.7	.9	1.0	3.1	.2	.7	2.0	.2	.4	1.0	3.4	1.6	1.9	2.5	1.1	1.5
4	1.2	2.0	2.3	.7	2.3	.8	.9	.6	1.1	.1	2.3	1.3	2.8	1.8	2.2	.9	2.5
5	1.2	2.2	2.5	.9	2.5	1.9	1.3	1.5	.0	.6	.8	2.8	1.8	3.2	2.4	2.0	2.2
6	1.2	2.4	2.3	1.3	2.3	.9	1.3	.3	.2	.3	2.8	2.6	1.1	1.8	1.9	2.5	2.9
7	.8	2.3	.9	1.4	1.6	1.2	1.4	.9	1.2	.1	1.5	1.8	1.7	1.3	2.2	2.9	2.6
8	.7	1.6	1.1	1.6	1.9	1.6	1.1	.0	.5	.4	.7	2.4	1.6	1.3	2.0	2.4	1.4
9	.7	1.6	1.7	1.0	1.3	2.1	1.0	1.7	1.2	.5	.9	1.8	2.2	2.0	1.7	3.5	2.1
10	.8	1.7	1.2	.5	1.8	1.9	1.1	.5	1.1	.2	1.1	1.9	2.0	2.6	1.0	2.5	2.2
11	.8	1.8	1.0	.5	1.8	.9	1.3	2.1	.9	1.1	1.5	1.8	1.9	1.5	.8	1.5	2.2
12	.7	1.5	.7	.4	1.5	.9	1.2	.7	1.2	.7	1.6	1.8	1.1	.8	.6	1.4	1.8
13	.5	.6	.7	.3	1.6	1.2	.5	1.5	1.4	.9	1.2	1.2	.7	1.0	.5	1.1	1.0
14	.4	.6	.6	.3	.8	1.3	.3	.6	.6	.7	.4	1.3	.7	1.9	.4	1.5	1.7
15	.3	.5	.3	.2	.3	1.0	.1	.5	.5	.4	.7	1.0	.5	1.6	.2	1.9	2.3
16	.2	.2	.2	.1	.4	.7	.3	.4	.4	.4	.5	.7	.6	1.2	.2	1.3	.7
17	.2	.1	.2	.1	.1	.4	.2	.3	.5	.2	.5	.8	.4	.8	.1	1.4	1.2
18	.2	.1	.2	.1	.4	.2	.2	.2	.2	.1	.4	.5	.3	.4	.1	.9	1.0
7/19-	.3	.4	.4	.3	.6	.3	.9	.5	.9	.3	.7	1.2	1.1	1.3	.1	2.8	.5
Total	22	24	26	15	37	25	24	16	16	14	29	33	26	32	41	35	44
run	40	62	34	22	46	41	37	24	27	23	44	48	42	45	52	50	61
	Early	Strike		Strike				Late					Strike		Early	Late	

Table 7. Preseason forecasts of the 1996 Bristol Bay inshore run (millions).

		Age						
	District	1.2	2.2	0.3	1.3	2.3	Total	Catch
1. ADF&G								
	Naknek/Kvichak	3.8	4.2		3.5	2.4	13.9	8.7
	Egegik	1.1	9.0		2.1	4.7	16.9	15.9
	Ugashik	1.3	2.3		1.8	0.8	6.2	5.5
	Nushagak	1.6	0.2	0.6	3.2	0.2	5.8	4.1
	Togiak	0.1	0.0		0.4	0.1	0.6	0.4
	Total	7.9	15.7	0.6	11.0	8.2	43.4	34.6
	Percent	18	36	1	26	19		
2. FRI								
	Naknek/Kvichak	2.4	2.4		3.7	4.7	13.2	7.5
	Egegik	0.8	6.0		1.7	7.2	15.7	13.8
	Ugashik	0.9	1.2		3.7	2.0	7.8	6.1
	Nushagak	1.8	0.2	0.7	4.8	0.2	7.7	5.4
	Togiak	0.1	0.0		0.6	0.1	0.8	0.6
	Total	6.0	9.8	0.7	14.5	14.2	45.2	33.4
	Percent	13	22	2	32	31		

Table 8. Daily sockeye salmon catches (thousands) in the South Unimak June fishery, 1985–95.

	Year											
Date	85	86	87	88	89	90	91	92	93	94	95	96
13						12			284		138	
14	389	55	44			34						
15			48	43			124	223	255		213	
16		31		79	361	69		143	305		73	
17			85			147	53	258	304	133	62	
18		92	67	59		91	106	345		71	10	
19	182				133	34	110	371	350	172	10	
20			56		441	82	226		492	53	77	
21	258	66	98	82		122		359		42	168	
22			76	35		120		354	203	96	151	
23	333	21		116	265	106	189			132	161	
24		17				88	262			66	128	
25		25	45				146			47	83	
Totals												
13-20	571	178	300	181	935	469	619	1340	1990	429	583	
13-25	1162	307	519	414	1200	905	1216	2053	2193	812	1274	
BB run	37	24	27	23	44	48	42	45	52	50	61	

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Through June 20
1985-1995

District Catch	Cumulative through 6/20 average 1,000s	Percent of season total (%) Average	Low	High
Naknek/Kvichak	57	1	0	2
Egegik	155	2	0	7
Nushagak	7	0	0	1
Togiak	3	1	0	5
Ugashik	28	1	0	2
All districts	243	1	0	4

River Escapement	Cumulative through 6/20 average 1,000s	Percent of season total (%) Average	Low	High
Kvichak	0	0	0	0
Naknek	0	0	0	0
Egegik	3	0	0	1
Wood	0	0	0	0
Igushik	0	0	0	0
Togiak	0	0	0	0
Ugashik	0	0	0	0

1985, 1987-95 Port Moller sockeye index	6/20 daily	Cumulative through 6/20
Average	62	376
Lowest	19	114
Highest	118	762

1996= ?

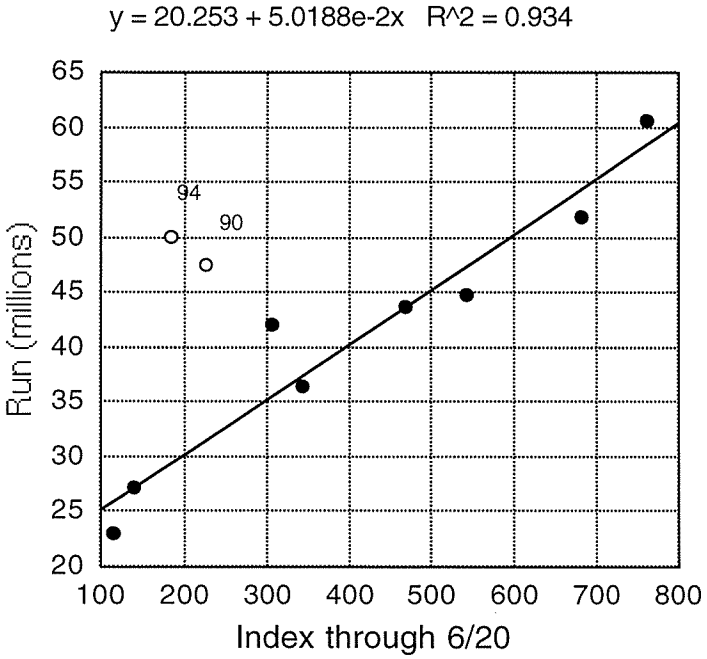
Bristol Bay runs 1985, 1987-95	
Average	43
Lowest	23
Highest	61

Forecast of total run (millions)

In past years the index through 6/20 accounted for 54% of the variation in Bristol Bay runs (93% excluding 1990 and 94).

(1996 cumulative index)X(.050)+(20.3)= total run

example: if 1996 index was 376 (average for past years) we would forecast the total run by: (376)X(.050)+20.3= 39.1 a run of 39 million



Comments

This is the first date that the Port Moller test fishery catches are used to forecast the total run. Prior to 6/19, Port Moller catches explained less than 50% of the variation in past runs. Sockeye passing Port Moller on this date will arrive in the Bay 6 to 9 days later (main body of the run). If water temperatures at Port Moller are averaging less than 4 C, we would expect a late run and if temperatures are over 8 C we can expect an early run.

There was very little fishing effort through June 20 and , in recent years , little fishing time, so catches were usually small through this date (except for the early run in 1993).

Tower counting usually begins now in the major rivers but few fish are present.

Through June 21
1985-1995

District Catch	Cumulative through 6/21 average 1,000s	Percent of season total (%) Average	Low	High
Naknek/Kvichak	126	1	0	4
Egegik	246	3	0	10
Nushagak	10	0	0	1
Togiak	5	2	0	7
Ugashik	36	1	0	2
All districts	416	2	0	6

River Escapement	Cumulative through 6/21 average 1,000s	Percent of season total (%) Average	Low	High
Kvichak	0	0	0	0
Naknek	2	0	0	1
Egegik	18	1	0	10
Wood	0	0	0	0
Igushik	0	0	0	0
Togiak	0	0	0	0
Ugashik	0	0	0	0

1985, 1987-95 Port Moller sockeye index	6/21 daily	Cumulative through 6/21
Average	77	453
Lowest	14	128
Highest	144	878

1996= ?

Bristol Bay runs 1985, 1987-95

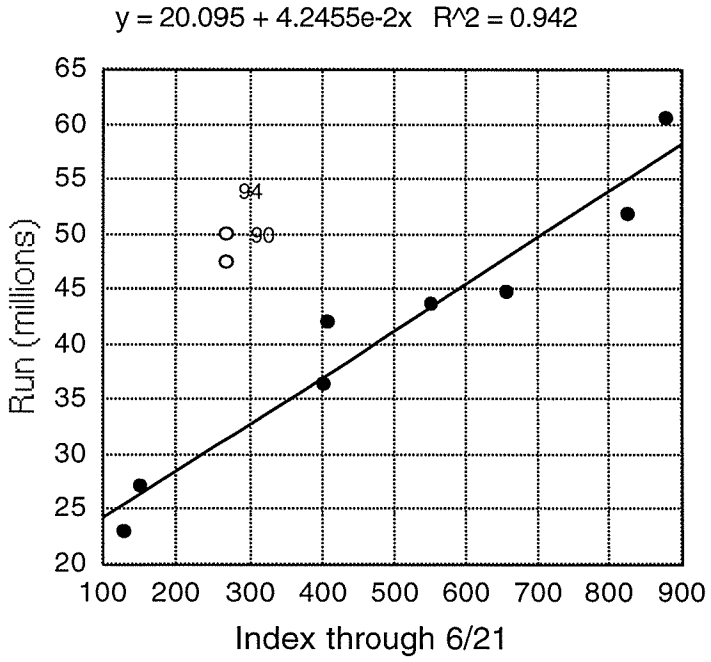
Average	43
Lowest	23
Highest	61

Forecast of total run (millions)

In past years the index through 6/21 accounted for 58% of the variation in Bristol Bay runs (94% excluding 1990 and 1994).

(1996 cumulative index)X(.042)+(20.1)= total run

example: if 1996 index was 453 (average for past years) we would forecast the total run by: (453)X(.042)+20.1= 39.1 a run of 39 million



Comments

The Port Moller index through June 21, 1994 was only 269 (well below average) yet the run turned out to be 50 million (the 3rd largest in recent years). Except for 1990 & 94, the relation between index catch and run is very close. The Port Moller test boat has been blown out 4 out of 10 years on this date.

Bristol Bay catches were usually small on this date (except for the early 1993 run)

There were Egegik escapements on this date only in 1989, 92, 93 and 95. Typically, escapements are in the hundreds of fish this early in the season.

Through June 22
1985-1995

District Catch	Cumulative through 6/22 average 1,000s	Percent of season total (%) Average	Low	High
Naknek/Kvichak	232	3	0	10
Egegik	345	3	0	14
Nushagak	13	0	0	1
Togiak	6	2	0	9
Ugashik	51	2	0	3
All districts	641	3	0	9

River Escapement	Cumulative through 6/22 average 1,000s	Percent of season total (%) Average	Low	High
Kvichak	0	0	0	0
Naknek	3	0	0	2
Egegik	37	2	0	18
Wood	1	0	0	0
Igushik	0	0	0	0
Togiak	0	0	0	0
Ugashik	0	0	0	0

1985, 1987-95 Port Moller sockeye index	6/22 daily	Cumulative through 6/22
Average	99	516
Lowest	26	172
Highest	188	955

1996= ?

Bristol Bay runs 1985,1987-95

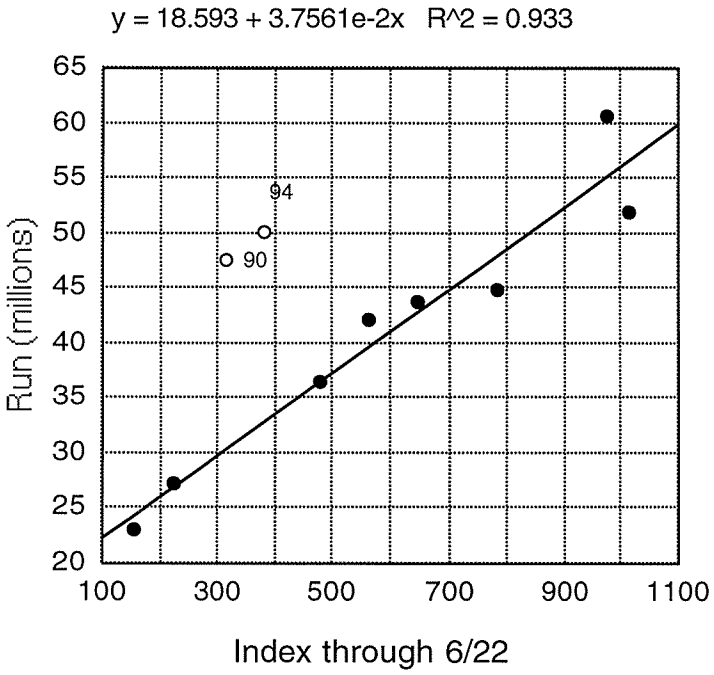
Average	43
Lowest	23
Highest	61

Forecast of total run (millions)

In past years the index through 6/22 accounted for 58% of the variation in Bristol Bay runs (93% excluding 1990 & 94).

(1996 cumulative index)X(.038)+(18.6)= total run

example: if 1996 index was 955 (highest for past years) we would forecast the total run by: (955)X(.038)+18.6= 54.9 a run of 55 million



Comments

In 1988, some fish arrived early in the Bay and provided exceptional catches at Egegik (14% of total catch through 6/22). This led some to expect a large run that unfortunately did not materialize. The low index catches at Port Moller correctly forecast the relatively small run of 23 million. In contrast, the large 1990 & 94 runs were slow to develop, both at Port Moller and in the Bay. the indices through the 22nd (313 & 379) did not indicate runs of 48 & 50 million were on the way.

The high Port Moller index (188) on June 22, 1993 did correctly indicated that a large and early run (52 million) was coming.

Through June 23
1985-1995

District Catch	Cumulative through 6/23 average 1,000s	Percent of season total (%) Average	Low	High
Naknek/Kvichak	283	3	0	11
Egegik	467	5	0	18
Nushagak	35	1	0	5
Togiak	7	2	0	10
Ugashik	57	2	0	4
All districts	843	3	0	11

River Escapement	Cumulative through 6/23 average 1,000s	Percent of season total (%) Average	Low	High
Kvichak	0	0	0	0
Naknek	4	0	0	2
Egegik	58	4	0	28
Wood	5	0	0	3
Igushik	1	0	0	1
Togiak	0	0	0	0
Ugashik	0	0	0	0

1985, 1987-95 Port Moller sockeye index	6/23 daily	Cumulative through 6/23
Average	97	650
Lowest	28	181
Highest	152	1135

1996= ?

Bristol Bay runs 1985, 1987-95

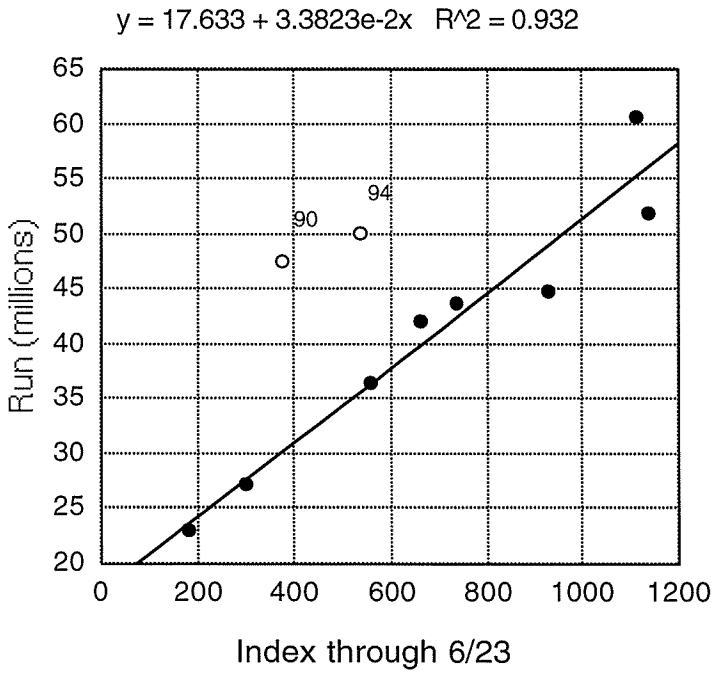
Average	43
Lowest	23
Highest	61

Forecast of total run (millions)

In past years the index through 6/23 accounted for 62% of the variation in Bristol Bay runs (93% excluding 1990 & 94).

(1996 cumulative index)X(.034)+(17.6)= total run

example: if the1996 index was 181 (lowest for past years) we would forecast the total run by: (181)X(.034)+17.6= 23.75
a run of 24 million



Comments

The accuracy of forecasts from the Port Moller catches through 6/23 is still rather poor because of the 1990 and 94 indices and runs (374, 531 and 48, 50 million); however, for other years, there has been a very close correlation between the index and the final run.

There were major fishery openings on this date in only 5 of the past 10 years. The catches were 311,000 (1988), 569,000 (1989) and 432,000 (1992), 379,000 (1993)and 444,000 (1995). There was only one opening (1993) in the Nushagak over the past 10 years on 6/23.

Escapements are just beginning at Naknek and Wood River towers. Egegik has had 2,000 or more past the tower on this date in 5 of the past 10 years. The largest daily escapement at Egegik in 1993 (156,000) occurred on this early date.

Through June 24
1985-1995

District Catch	Cumulative through 6/24 average 1,000s	Percent of season total (%) Average	Low	High
Naknek/Kvichak	283	3	0	11
Egegik	552	5	0	18
Nushagak	39	1	0	5
Togiak	9	3	0	10
Ugashik	57	2	0	4
All districts	934	3	0	11

River Escapement	Cumulative through 6/24 average 1,000s	Percent of season total (%) Average	Low	High
Kvichak	3	0	0	1
Naknek	9	1	0	3
Egegik	71	5	0	35
Wood	11	1	0	7
Igushik	2	1	0	3
Togiak	0	0	0	0
Ugashik	0	0	0	0

1985, 1987-95 Port Moller sockeye index	6/24 daily	Cumulative through 6/24
Average	105	754
Lowest	50	231
Highest	180	1234

1996= ?

Bristol Bay runs 1985, 1987-95

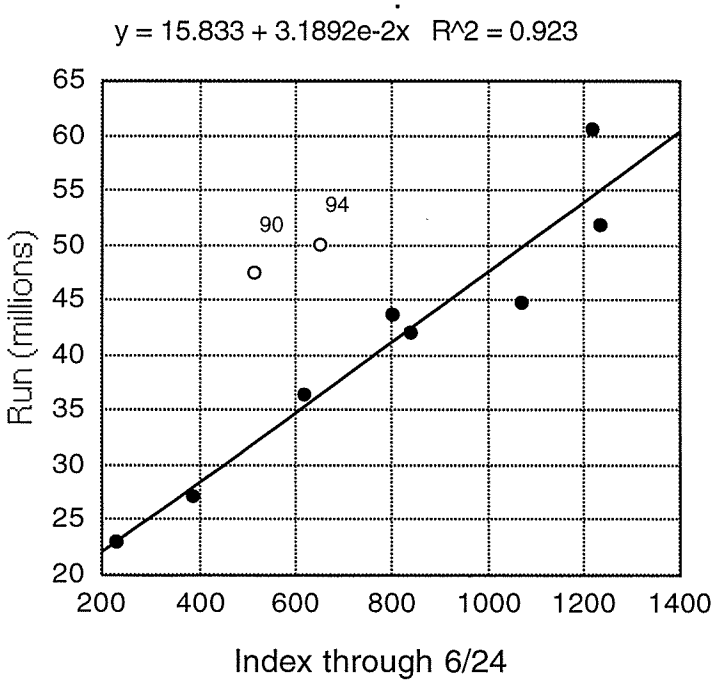
Average	43
Lowest	23
Highest	61

Forecast of total run (millions)

In past years the index through 6/24 accounted for 66% of the variation in Bristol Bay runs (92% excluding 1990 & 94).

(1996 cumulative index)X(.032)+(15.8)= total run

example: if 1996 index was 754 (average for past years) we would forecast the total run by: (754)X(.032)+15.8= 39.93 a run of 40 million



Comments

The relation between the Port Moller index catch and the total Bristol Bay run improves on this date, but the 1990 & 94 indices and runs are still unusual. The test boat has been blown out on the 24th three times in the past 9 years. Sockeye passing Port Moller on this date will arrive in Bristol Bay about July 1-2.

There has been only one major fishery opening on this date (Egegik, 1993) during the past 10 years. On average, 3% of the Nushagak runs, 5% of the Naknek/ Kvichak runs and 8% of the Egegik runs passed through the fishing district by this date.

The Naknek tower count was 1,000 or more on this date in every year except 1987, whereas the Kvichak tower count was less than 1,000 except in 1992 and 1993

"

Through June 25
1985-1995

District Catch	Cumulative through 6/25 average 1,000s	Percent of season total (%) Average	Low	High
Naknek/Kvichak	290	3	1	12
Egegik	835	6	0	18
Nushagak	59	1	0	6
Togiak	10	3	0	10
Ugashik	57	2	0	4
All districts	1246	4	1	13

River Escapement	Cumulative through 6/25 average 1,000s	Percent of season total (%) Average	Low	High
Kvichak	10	0	0	1
Naknek	35	3	0	12
Egegik	88	6	0	39
Wood	22	2	0	11
Igushik	3	1	0	4
Togiak	0	0	0	0
Ugashik	0	0	0	0

1985, 1987-95 Port Moller sockeye index	6/25 daily	Cumulative through 6/25
Average	97	852
Lowest	22	253
Highest	232	1466

Forecast of total run (millions)

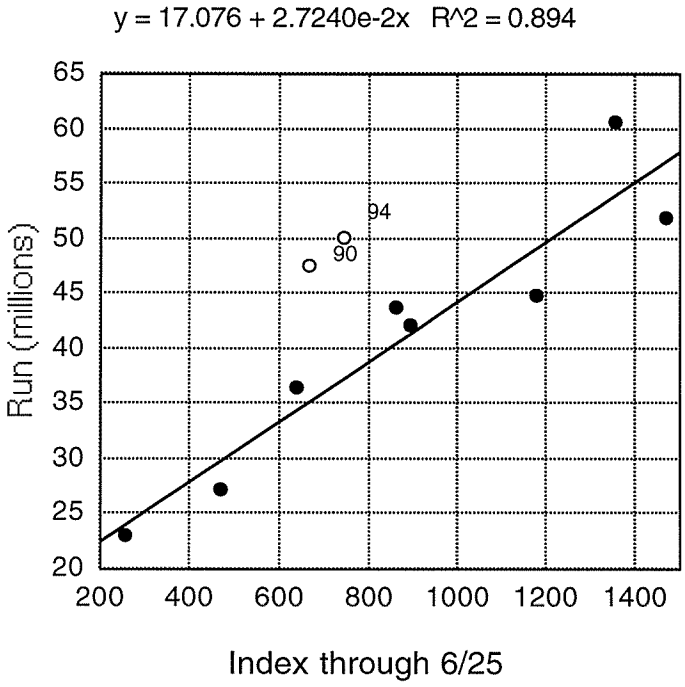
In past years the index through 6/25 accounted for 69% of the variation in Bristol Bay runs (89% excluding 1990 & 94)

1996= ?

(1996 cumulative index)X(.027)+(17.1)= total run

Bristol Bay runs 1985, 1987-95	
Average	43
Lowest	23
Highest	61

example: if 1996 index was 1466 (highest for past years) we would forecast the total run by: (1466)X(.027)+17.1= 56.68 a run of 57 million



Comments

This is the first date on which we made forecasts from Port Moller index catches in past years. The relation between index and run is now fairly close as we are about 3 days from the mid point of the run at Port Moller.
About this time we will compare the age composition of sockeye at Port Moller with the pre-season forecasts and the average lengths by age & sex will be examined--small fish=large run, large fish= small run.

There were major fishery openings on this date in 6 of the past 10 years. Catches were 200,000 in 1987 & 1989; 700,000 in 1992; 1,200,000 in 1993; 130,000 in 1994; and 1 million in 1995.

Escapements are usually just under way, an exception was in 1993 with 10% of the total by 6/25

Through June 26
1985-1995

District Catch	Cumulative through 6/26 average 1,000s	Percent of season total (%) Average	Low	High
Naknek/Kvichak	400	4	0	16
Egegik	955	7	0	23
Nushagak	105	3	0	10
Togiak	12	4	0	16
Ugashik	65	2	0	4
All districts	1532	5	1	17

River Escapement	Cumulative through 6/26 average 1,000s	Percent of season total (%) Average	Low	High
Kvichak	44	1	0	4
Naknek	73	5	0	18
Egegik	126	8	0	47
Wood	41	3	0	14
Igushik	5	2	0	5
Togiak	0	0	0	0
Ugashik	0	0	0	0

1985, 1987-95 Port Moller sockeye index	6/26 daily	Cumulative through 6/26
Average	93	944
Lowest	28	305
Highest	158	1624

1996= ?

Bristol Bay runs 1985, 1987-95

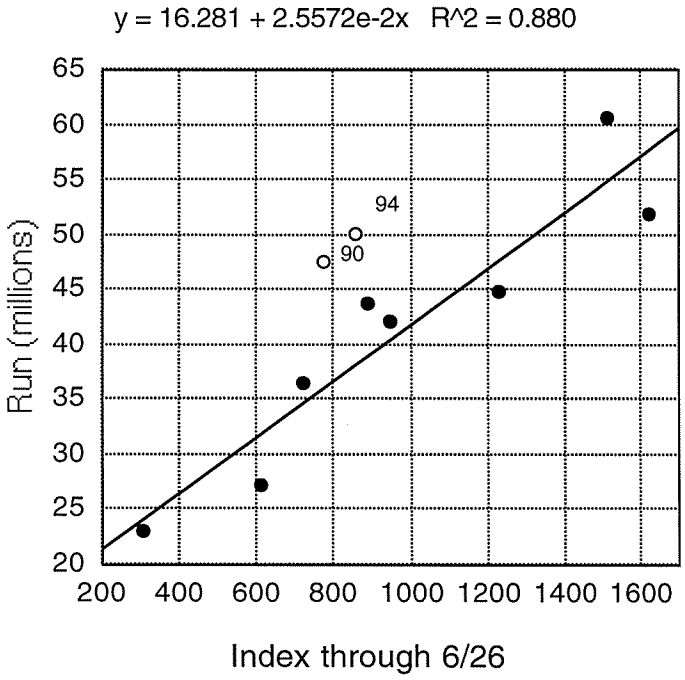
Average	43
Lowest	23
Highest	61

Forecast of total run (millions)

In past years the index through 6/26 accounted for 70% of the variation in Bristol Bay runs (88% excluding 1990 & 94).

(1996 cumulative index)X(.026)+(16.3)= total run

example: if 1996 index was 944 (average for past years) we would forecast the total run by: (944)X(.026)+16.3= 40.84 a run of 41 million



Comments

The weather at Port Moller was fishable on this this date every year except 1993. We are about 2 days before the mid point in the run at Port Moller (average timing).

There were only 4 major fishery openings on this date: 1988 (100,000); 1989 (695,000); 1993 (all districts, 1,155,000) and 1995 (991,000).

On the average through 6/26, 6% of the Nushagak run, 10% of the Naknek/Kvichak run, and 13% of the Egegik run had passed through the fishing district. However in 1993, 17%, 19% and 24% of these runs were through the districts. At the other extreme, only 1% of the BB run was through the districts by 6/26 in 1986.

Through June 27
1985-1995

District Catch	Cumulative through 6/27 average 1,000s	Percent of season total (%) Average	Low	High
Naknek/Kvichak	590	6	0	21
Egegik	1355	11	0	27
Nushagak	155	4	0	13
Togiak	16	6	0	22
Ugashik	74	2	0	4
All districts	2185	8	1	21

River Escapement	Cumulative through 6/27 average 1,000s	Percent of season total (%) Average	Low	High
Kvichak	119	2	0	7
Naknek	123	8	0	20
Egegik	165	10	0	45
Wood	69	5	0	16
Igushik	13	3	0	9
Togiak	0	0	0	0
Ugashik	0	0	0	0

1985, 1987-95 Port Moller sockeye index	6/27 daily	Cumulative through 6/27
Average	103	1048
Lowest	48	353
Highest	158	1783

1996= ?

Bristol Bay runs 1985, 1987-95

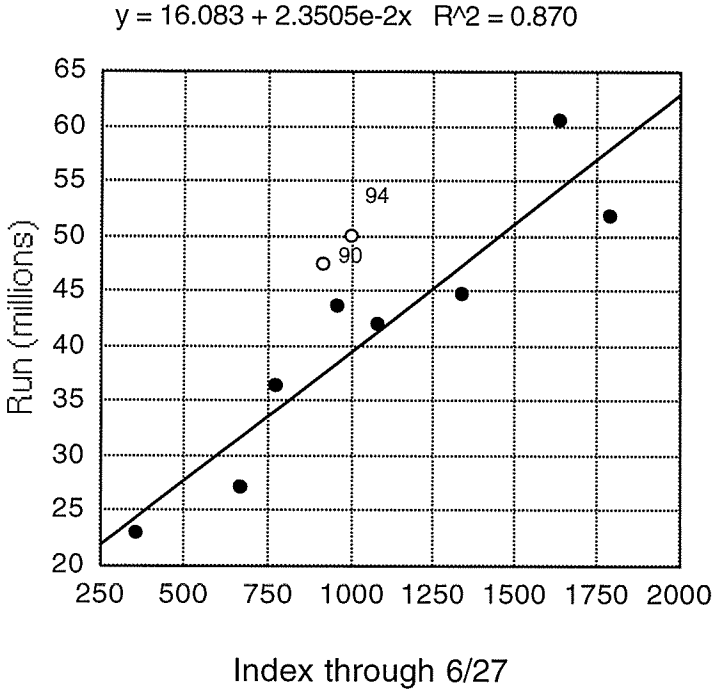
Average	43
Lowest	23
Highest	61

Forecast of total run (millions)

In past years the index through 6/27 accounted for 73% of the variation in Bristol Bay runs (87% excluding 1990 & 94).

(1996 cumulative index)X(.024)+(16.1)= total run

example: if 1996 index was 353 (lowest for past years) we would forecast the total run by: (353)X(.024)+16.1= 24.57, a run of 25 million



Comments

Sockeye passing Port Moller on this date usually take about 7 days to reach the fishing districts. Earlier (6/11-15) the fish take longer (8-10 days) because temperatures are usually colder. The sockeye may take only 5-6 days to reach the districts in July.

On this date, there were only 3 major openings in the Nushagak (1992,1993, 1995; ca 170,000 ea) and in Naknek/Kvichak (1988, 361,000; 1993, 470,000 and 1995, 1.1 million) however, there have been 7 openings at Egegik since 1985 with an average catch of 623,000.

The average BB catch plus escapement on this date was 873,000 and the cumulative average C+E was 2.7 million. An average of 6% of the annual runs were accounted for by the C+E through 6/27.

Through June 28
1985-1995

District Catch	average 1,000s	Cumulative through 6/28 Percent of season total (%) Average	Low	High
Naknek/Kvichak	820	8	0	29
Egegik	1674	14	0	33
Nushagak	227	6	0	18
Togiak	20	7	0	26
Ugashik	75	2	1	4
All districts	2810	9	1	26

River Escapement	average 1,000s	Cumulative through 6/28 Percent of season total (%) Average	Low	High
Kvichak	225	3	0	14
Naknek	170	10	0	22
Egegik	216	14	0	51
Wood	89	7	0	28
Igushik	25	6	0	14
Togiak	0	0	0	0
Ugashik	0	0	0	0

1985, 1987-95 Port Moller sockeye index	6/28 daily	Cumulative through 6/28
Average	146	1194
Lowest	33	386
Highest	284	1973

1996= ?

Bristol Bay runs 1985, 1987-95

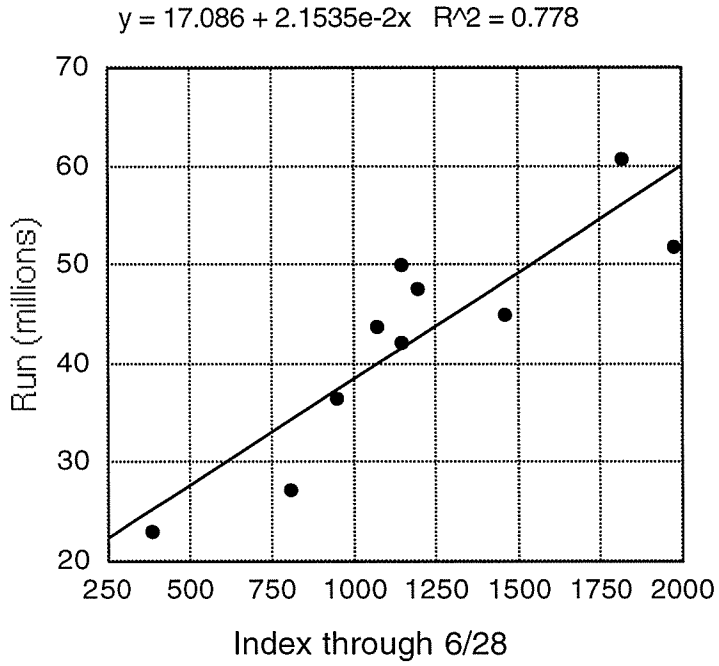
Average	43
Lowest	23
Highest	61

Forecast of total run (millions)

In past years the index through 6/28 accounted for 78% of the variation in Bristol Bay runs and all years are included for forecasting from this date on.

(1996 cumulative index)X(.022)+(17.1)= total run

example: if 1996 index was 1194 (average for past years) we would forecast the total run by: (1194)X(.022)+17.1= 43.37, a run of 43 million



Comments

The average daily index catch (sum of catches at stations 2-8) has been highest on the 28th to 30th, which is about the mid point in the run past Port Moller. The largest recorded daily indices were 284 made on 6/28/90 and 287 made on 6/30/93.

Prior to 1993, when all districts were open with a total catch of 2.2 million, there had been only one major opening on this date for: Egegik (1989; 1.2 million), Naknek/Kvichak (1985; 1.1 miliion), and Nushagak (1988; 181,000) since 1985.
The total BB catch in 1995 was 1.9 million on 6/28.

This has usually been the first date of large escapement to the Kvichak (50,000+); however, there was no escapement through 6/28 in 1986 and1987, and only 5,000 in 1990 and 24,000 in 1994. Naknek has had over 100,000 escapement by 6/28 except in 1986,1987 and 1994.

Through June 29
1985-1995

District Catch	average 1,000s	Cumulative through 6/29 Percent of season total (%) Average	Low	High
Naknek/Kvichak	1200	11	0	34
Egegik	2111	19	0	41
Nushagak	327	8	0	26
Togiak	23	8	0	31
Ugashik	123	2	1	9
All districts	3779	13	1	32

River Escapement	average 1,000s	Cumulative through 6/29 Percent of season total (%) Average	Low	High
Kvichak	343	6	0	21
Naknek	247	15	0	32
Egegik	265	17	1	52
Wood	118	10	0	33
Igushik	36	9	0	19
Togiak	0	0	0	0
Ugashik	0	0	0	0

1985, 1987-95 Port Moller sockeye index	6/29 daily	Cumulative through 6/29
Average	130	1324
Lowest	75	472
Highest	217	2085

Forecast of total run (millions)

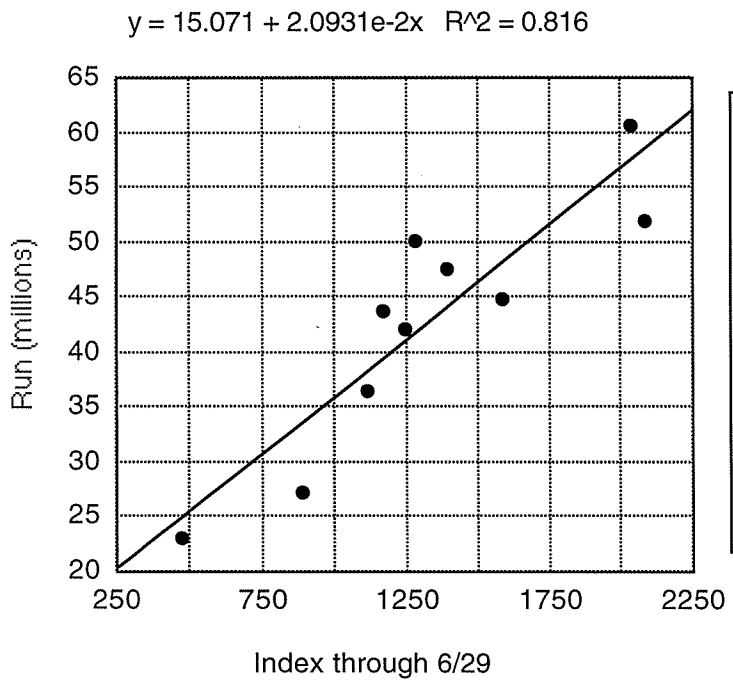
In past years the index through 6/29 accounted for 82% of the variation in Bristol Bay runs

1996= ?

(1996 cumulative index)X(.021)+ (15.1)= total run

example: if 1996 index was 2085 (highest for past years) we would forecast the total run by: (2085)X(.021)+15.1= 58.88, a run of 59 million

Bristol Bay runs 1985, 1987-95	
Average	43
Lowest	23
Highest	61



Comments

The middle of the Bristol Bay run passes Port Moller at this time and index catches have been relatively high in all years. Forecasts from the Port Moller daily cumulative index catches have about the same reliability from 6/29 to 7/3.

Fishery openings on this date in either the Naknek/ Kvichak or Egegik districts have produced an average of 600,000 fish. There were only three Nushagak openings on 6/29 since 1985: 1989 (350,000), 1993 (570,000), and 1995 (180,000).

On the average, the cumulative catch plus escapement through 6/29 has accounted for 11% of the final run (range: 2%-30%).

Through June 30
1985-1995

District Catch	Cumulative through 6/30 average 1,000s	Percent of season total (%) Average	Low	High
Naknek/Kvichak	1650	15	0	39
Egegik	2537	23	4	44
Nushagak	436	12	0	29
Togiak	31	10	0	34
Ugashik	179	4	1	13
All districts	4828	17	2	35

River Escapement	Cumulative through 6/30 average 1,000s	Percent of season total (%) Average	Low	High
Kvichak	482	8	0	23
Naknek	339	19	1	38
Egegik	320	21	2	52
Wood	164	13	0	39
Igushik	47	12	0	28
Togiak	0	0	0	2
Ugashik	0	0	0	0

1985, 1987-95 Port Moller sockeye index	6/30 daily	Cumulative through 6/30
Average	157	1481
Lowest	20	523
Highest	287	2372

1996= ?

Bristol Bay run 1985, 1987-95

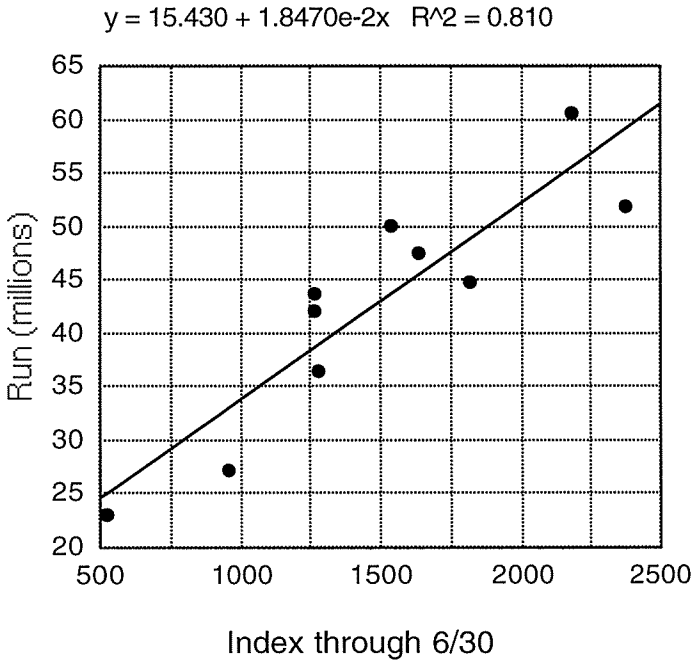
Average	43
Lowest	23
Highest	61

Forecast of total run (millions)

In past years the index through 6/30 accounted for 81% of the variation in Bristol Bay runs

(1996 cumulative index)X(.018)+ (15.4)= total run

example: if 1996 index was 1481 (average for past years) we would forecast the total run by: (1481)X(.018)+15.4= 42.06, a run of 42 million



Comments

There was an unusually low index on this date in 1991 (20), but index catches averaged 172 in other years. With average or early run timing, a forecast by district can be made with statistics through 6/30 (forecast made on 7/1). With district forecasts, we can then forecast the total Bristol Bay catch.

On the average since 1985, 17% of the Bristol Bay catch was made by the 30th; however, 21% of the Nushagak runs, 25% of the Naknek/Kvichak runs and 29% of the Egegik runs passed through the fishing district by 6/30. In a very early run in 1979, over 50% of the Bristol Bay run was through the districts by the 30th; in contrast, in the late run of 1971, less than 10% of the run was in the districts by the 30th.

Through July 1
1985-1995

District Catch	Cumulative through 7/1 average 1,000s	Percent of season total (%) Average	Low	High
Naknek/Kvichak	2023	20	0	46
Egegik	2936	27	4	57
Nushagak	603	15	3	35
Togiak	39	12	1	34
Ugashik	194	4	1	13
All districts	5789	20	4	40

River Escapement	Cumulative through 7/1 average 1,000s	Percent of season total (%) Average	Low	High
Kvichak	667	11	0	25
Naknek	465	26	1	51
Egegik	385	22	4	54
Wood	215	16	1	42
Igushik	58	12	1	27
Togiak	1	1	0	5
Ugashik	0	0	0	0

1985, 1987-95 Port Moller sockeye index	7/01 daily	Cumulative through 7/01
Average	114	1595
Lowest	26	568
Highest	187	2547

1996= ?

Bristol Bay runs 1985, 1987-95

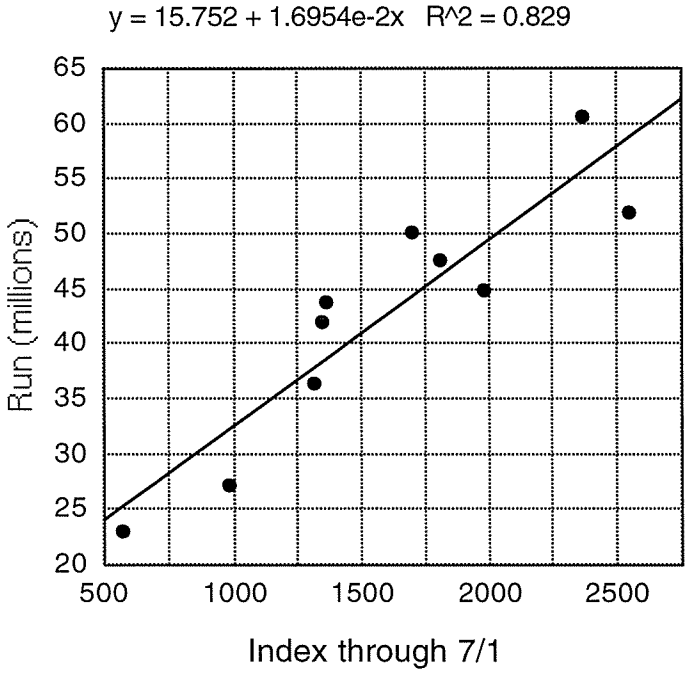
Average	43
Lowest	23
Highest	61

Forecast of total run (millions)

In past years the index through 7/1 accounted for 83% of the variation in Bristol Bay runs

(1996 cumulative index)X(.017) + (15.8)= total run

example: if 1996 index was 568 (lowest for past years) we would forecast the total run by: (568)X(.017)+15.8= 25.46, a run of 25 million



Comments

Over the past six years with runs over 40 million, the daily index catches ranged from 79 to 187 on July 1 and the cumulative indices were over 1340.

The average cumulative catch + escapement through 7/1 was 18% of the total Bristol Bay run (range: 4% in 1986 and 38% in 1993).

By July, 1 the Kvichak escapements were under way in all but 1986. In 1989 and 1993, 25% of the total escapement passed the tower by 7/1.

Through July 2
1985-1995

District Catch	Cumulative through 7/2 average 1,000s	Percent of season total (%) Average	Low	High
Naknek/Kvichak	2729	26	1	67
Egegik	3838	36	16	58
Nushagak	802	23	4	48
Togiak	48	14	1	34
Ugashik	260	5	1	17
All districts	7672	27	10	53

River Escapement	Cumulative through 7/2 average 1,000s	Percent of season total (%) Average	Low	High
Kvichak	947	15	0	31
Naknek	624	35	13	65
Egegik	450	28	8	58
Wood	279	23	2	49
Igushik	72	18	1	48
Togiak	2	1	0	8
Ugashik	0	0	0	0

1985, 1987-95 Port Moller sockeye index	7/02 daily	Cumulative through 7/02
Average	108	1703
Lowest	27	614
Highest	242	2789

1996= ?

Bristol Bay runs 1985, 1987-95

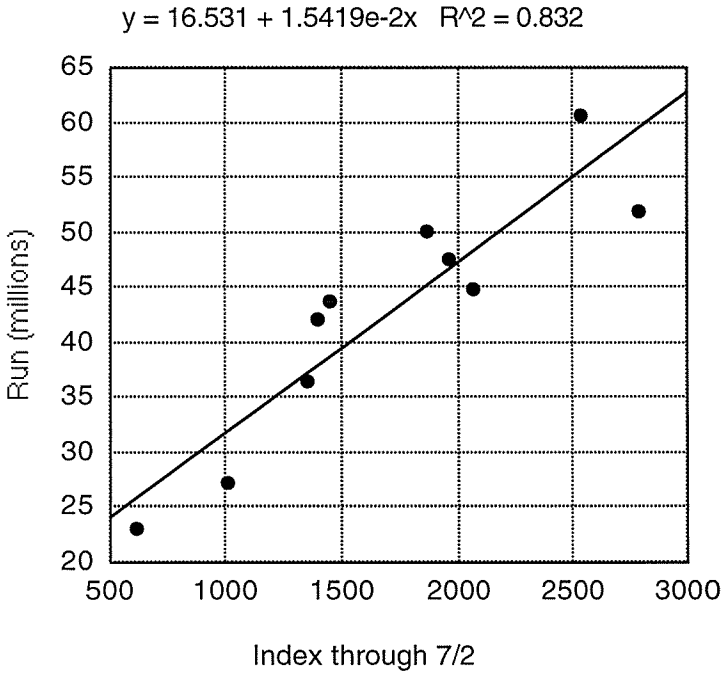
Average	43
Lowest	23
Highest	61

Forecast of total run (millions)

In past years the index through 7/2 accounted for 83% of the variation in Bristol Bay runs

(1996 cumulative index)X(.015) + (16.5)= total run

example: if 1996 index was 2789 (highest for past years) we would forecast the total run by: (2789)X(.015)+16.5= 58.34, a run of 58 million



Comments

Port Moller index catches on July 2 were over 50 when Bristol Bay runs were over 40 million and index catches were under 50 when the runs were less than 30 million.

The Egegik fishery was open 9 of the past 10 years on 7/2 and the catches ranged from 330,000 to 2.7 million. The average Bristol Bay catch on this date was 1.9 million. The all-time record single-day catch in Bristol Bay (5.3 million) was on 7/2/93. The Nushagak has had a major opening on 7/2 in only 5 of the past 10 years.

Although an average of 27% of the seasons catch was made by 7/2, 41% of the Egegik runs, 38% of the Naknek/Kvichak runs and 32% of the Nushagak runs had passed through the fishing districts by July 2. Escapements have come more from the early part of the runs while catches have come from the later part.

Through July 3
1985-1995

District Catch	Cumulative through 7/3 average 1,000s	Percent of season total (%) Average	Low	High
Naknek/Kvichak	3208	30	6	67
Egegik	4378	41	23	66
Nushagak	1060	30	11	56
Togiak	58	17	2	34
Ugashik	444	9	1	27
All districts	9144	32	13	59

River Escapement	Cumulative through 7/3 average 1,000s	Percent of season total (%) Average	Low	High
Kvichak	1278	20	1	40
Naknek	783	44	31	74
Egegik	571	35	13	59
Wood	391	33	3	65
Igushik	86	22	2	53
Togiak	3	1	0	11
Ugashik	0	0	0	0

1985, 1987-95 Port Moller sockeye index	7/03 daily	Cumulative through 7/03
Average	118	1821
Lowest	23	637
Highest	223	2849

Forecast of total run (millions)

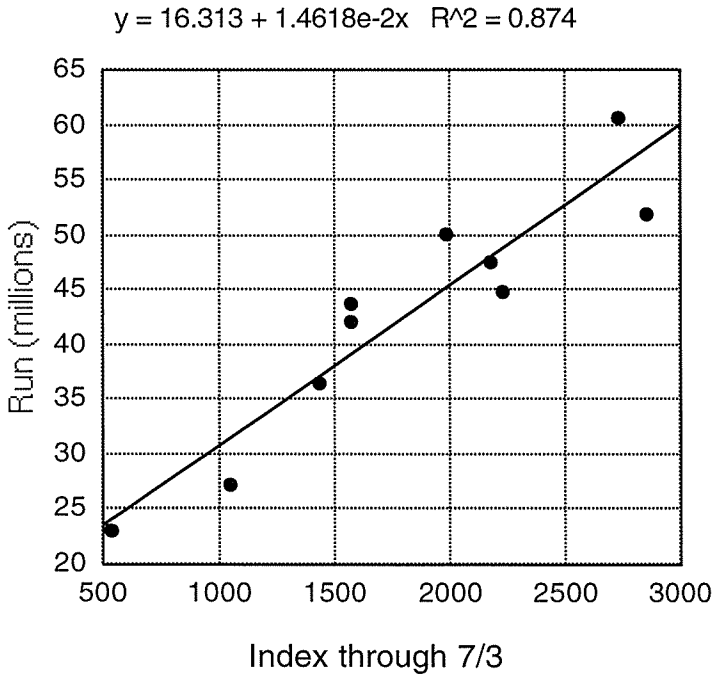
In past years the index through 7/3 accounted for 87% of the variation in Bristol Bay runs

1996= ?

(1996 cumulative index)X(.015) + (16.3)= total run

Bristol Bay runs 1985, 1987-95	
Average	43
Lowest	23
Highest	61

example: if 1996 index was 2849 (highest for past years) we would forecast the total run by: (2849)X(.015)+16.3= 59.04, a run of 59 million



Comments

The middle part of the Bristol Bay run is still passing Port Moller on July 3 and the daily index catches have been over 60 when a large run was on the way.

Major openings at Egegik have produced an average catch of about 1 million on 7/3. The Nushagak was open each of the past 10 years on 7/3 and catches averaged 284,000 per opening. Sockeye have usually arrived inside Ugashik Bay by July 3. Openings in 1986, 1987,1993 and 1995 produced catches of 657,000, 793,000, 260,000 and 215,000.

Total catch and escapement through July 3 as reported by ADF&G, has averaged 30% of the final run.

In each of the past 10 years the Naknek escapement has exceeded 300,000 by 7/3 and the Egegik escapement has exceeded 300,000 in 8 of the past 10 years

Through July 4
1985-1995

District Catch	Cumulative through 7/4 average 1,000s	Percent of season total (%) Average	Low	High
Naknek/Kvichak	3819	36	6	73
Egegik	4967	46	27	73
Nushagak	1268	36	17	61
Togiak	70	20	5	41
Ugashik	535	12	3	29
All districts	10654	37	16	64

River Escapement	Cumulative through 7/4 average 1,000s	Percent of season total (%) Average	Low	High
Kvichak	1750	28	6	53
Naknek	906	52	36	80
Egegik	710	43	23	66
Wood	469	40	7	73
Igushik	105	28	2	55
Togiak	4	2	0	13
Ugashik	2	0	0	1

1985, 1987-95 Port Moller sockeye index	7/04 daily	Cumulative through 7/04
Average	102	1923
Lowest	22	659
Highest	197	2928

Forecast of total run (millions)

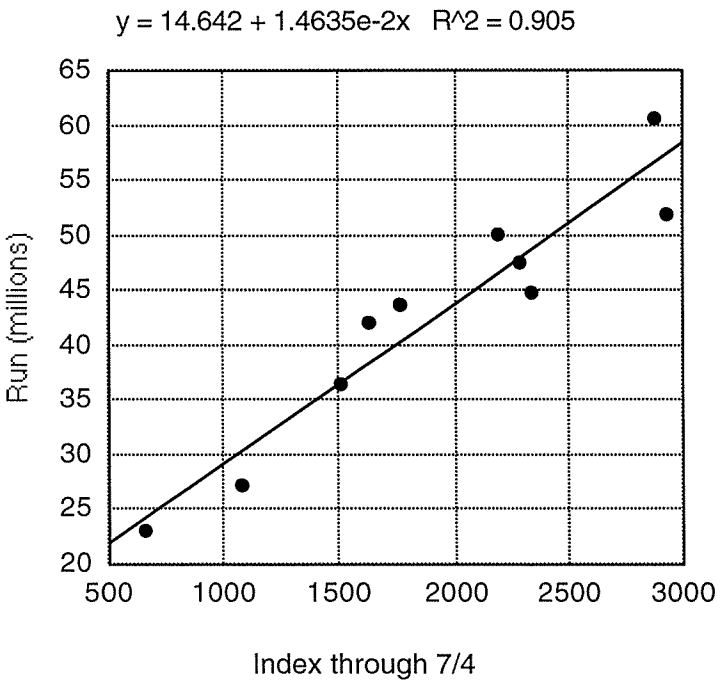
In past years the index through 7/4 accounted for 90% of the variation in Bristol Bay runs

1996= ?

(1996 cumulative index)X(.015) + (14.6)= total run

Bristol Bay runs 1985, 1987-95	
Average	43
Lowest	23
Highest	61

example: if 1996 index was 1923 (average for past years) we would forecast the total run by: (1923)X(.015)+14.6=43.44, a run of 43 million



Comments

Numbers of sockeye passing Port Moller should start declining after this date. Forecasts from the cumulative index catches have the greatest reliability for today and the next 2 days, because past indices have accounted for about 90% of the variation in the Bristol Bay runs (the data points on the graphs are close to the prediction line).

July 4 is the half way point in the average Egegik and Naknek/Kvichak run (July 5 for the Nushagak); however, only 36% of the average Naknek/Kvichak catch was made by July 4 over the past 10 years.

Total Bristol Bay catch + escapement through July 4 averaged 36% of the final runs since 1985 (range: 16% in 1994 to 60% in 1993).

The largest single day's escapement of 1.7 million was recorded on this date in 1994.

Through July 5
1985-1995

District Catch	Cumulative through 7/5 average 1,000s	Percent of season total (%) Average	Low	High
Naknek/Kvichak	4572	44	6	78
Egegik	5568	52	36	78
Nushagak	1462	41	17	67
Togiak	81	23	5	48
Ugashik	666	15	3	31
All districts	12344	43	21	70

River Escapement	Cumulative through 7/5 average 1,000s	Percent of season total (%) Average	Low	High
Kvichak	2214	36	18	65
Naknek	979	57	39	81
Egegik	845	51	34	70
Wood	513	44	11	79
Igushik	129	34	5	58
Togiak	6	2	0	15
Ugashik	9	1	0	4

1985, 1987-95 Port Moller sockeye index	7/05 daily	Cumulative through 7/05
Average	98	2021
Lowest	30	707
Highest	143	3028

Forecast of total run (millions)

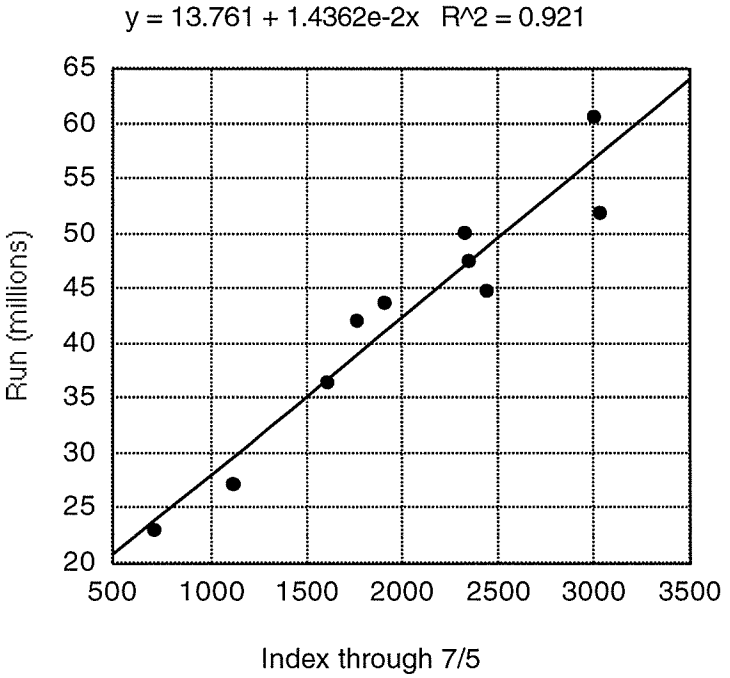
In past years the index through 7/5 accounted for 92% of the variation in Bristol Bay runs

1996= ?

(1996 cumulative index)X(.014) + (13.8)= total run

Bristol Bay runs 1985, 1987-95	
Average	43
Lowest	23
Highest	61

example: if 1996 index was 3028 (highest for past years) we would forecast the total run by: (3028)X(.014)+13.8= 56.19, a run of 56 million



Comments

Sockeye passing Port Moller today should be in the fishing districts about the 11th or 12th.

The Ugashik runs are usually well under way by now but few fish are past the tower. Ugashik catches on 7/5 have averaged about 287,000. The Egegik run is still near the peak and catches have averaged 734,000 on this date, whereas Naknek/Kvichak catches averaged 828,000. There were only 6 openings on the 5th in the Nushagak district, and catches on those openings averaged 357,000.

Escapement goals are usually assured by July 5 in Egegik, Naknek and Wood River, although the goals (1 million) may not be reached until another 2 or 3 days.

50% of the Nushagak runs have usually passed through the fishery by July 5.

Through July 6
1985-1995

District Catch	Cumulative through 7/6 average 1,000s	Percent of season total (%) Average	Low	High
Naknek/Kvichak	5214	49	9	82
Egegik	6158	58	44	83
Nushagak	1661	48	28	77
Togiak	91	25	7	49
Ugashik	832	19	7	40
All districts	13950	48	28	75

River Escapement	Cumulative through 7/6 average 1,000s	Percent of season total (%) Average	Low	High
Kvichak	2643	44	23	71
Naknek	1038	61	45	82
Egegik	998	60	44	78
Wood	568	48	16	83
Igushik	156	40	12	61
Togiak	9	4	0	16
Ugashik	20	1	0	9

1985, 1987-95 Port Moller sockeye index	7/06 daily	Cumulative through 7/06
Average	92	2114
Lowest	23	730
Highest	182	3177

Forecast of total run (millions)

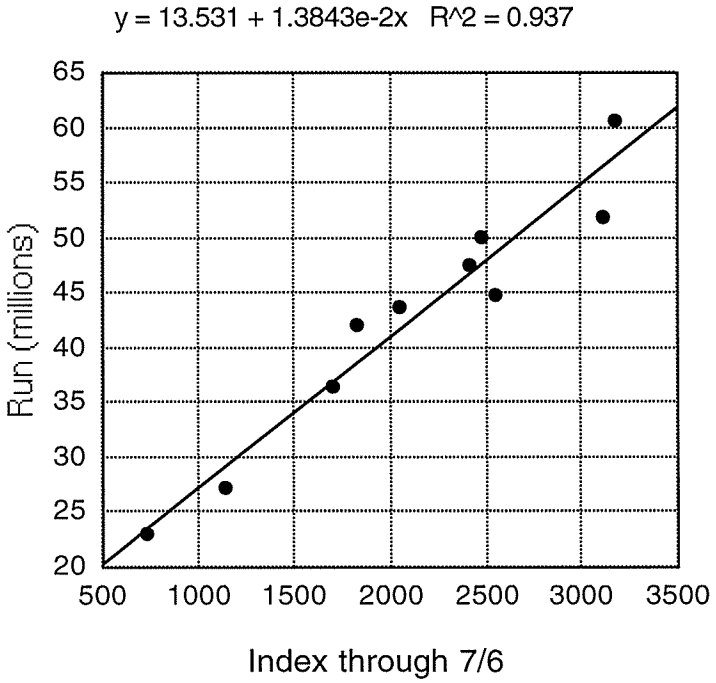
In past years the index through 7/6 accounted for 94% of the variation in Bristol Bay runs

1996= ?

(1996 cumulative index) X (.014) + (13.5)= total run

Bristol Bay runs 1985, 1987-95	
Average	43
Lowest	23
Highest	61

example: if 1996 index was 2114 (average for past years) we would forecast the total run by: (2114)X(.014)+13.5= 43.00, a run of 43 million



Comments

Sockeye catches at Port Moller were still relatively high on this date except in 1988 (year of the small run). The cumulative indices show a very close correlation with past runs.

Over half of the Egegik catch has been made by July 6 and nearly half of the total Bristol Bay catch (48%) since 1985. For the years with openings on 7/6, Nushagak catches averaged 301,000; Egegik catches averaged 786,000 and Naknek/Kvichak catches averaged 970,000. For 6 openings on this date in Ugashik the catches averaged 290,000.

On the average, 44% of the Bristol Bay escapement was counted by 7/6 and the total catch + escapement as reported by ADF&G through July 6 averaged 47% the final runs (range: 30% in 1994 to 72% in 1993).

Through July 7
1985-1995

District Catch	average 1,000s	Cumulative through 7/7 Percent of season total (%) Average	Low	High
Naknek/Kvichak	5752	53	11	87
Egegik	6756	64	51	87
Nushagak	1839	52	28	78
Togiak	101	27	7	49
Ugashik	1106	25	7	51
All districts	15551	54	37	80

River Escapement	average 1,000s	Cumulative through 7/7 Percent of season total (%) Average	Low	High
Kvichak	3039	50	23	79
Naknek	1107	66	48	83
Egegik	1108	66	53	86
Wood	654	56	21	86
Igushik	178	45	17	69
Togiak	13	5	0	19
Ugashik	45	3	0	15

1988-89, 1991-95 Port Moller sockeye index	7/07 daily	Cumulative through 7/07
only 7 years		
Average	79	2350
Lowest	39	769
Highest	108	3283

1996= ?

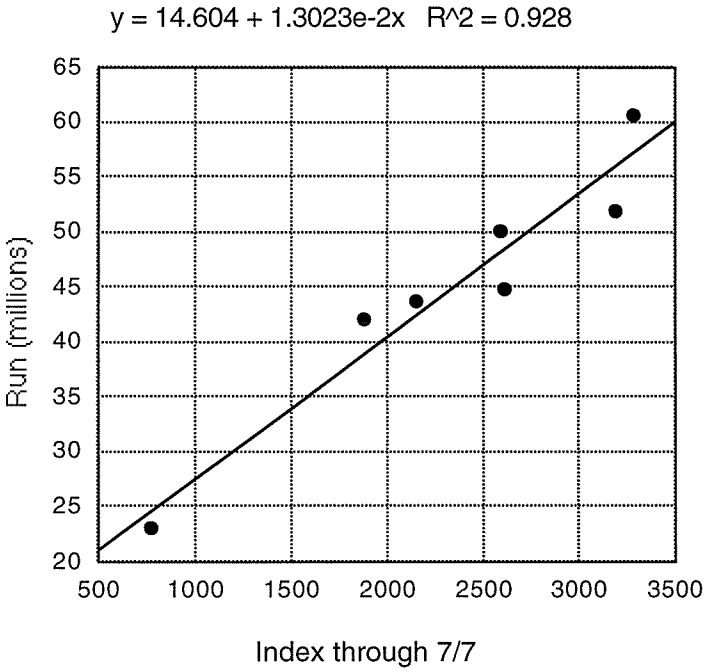
Bristol Bay runs 1985, 1987-95	
Average	43
Lowest	23
Highest	61

Forecast of total run (millions)

In the 7 available years the index through 7/7 accounted for 93% of the variation in Bristol Bay runs

(1996 cumulative index) x (.013) + (14.6)=(total run)

example: if the 1996 index was 2350 (average for 7 years) we would forecast the total run by (2350)X(.013) + 14.6= 45.15 a run of 46 million



Comments

Sockeye salmon passing Port Moller today and tomorrow will probably be in the fishing districts by July 15.

This forecast is based only on 7 years but in another year or two we will make daily forecasts through July 9.

On the average through July 7 (1985-95), 68% of the Egegik runs, 67% of the Naknek/Kvichak runs, and 62% of the Nushagak runs had passed through the fishing districts, but only 64%, 53% and 52% of the catches were made by July 7. Fishing is usually continuous from now until July 20.

Total Bristol Bay catch + escapement through July 7 as reported by ADF&G averaged 52% of the final runs (range: 38% in 1986 and 1994 to 77% in 1993).

About half of the Kvichak escapement was reached by this date and most escapement goals are assured by 7/7.

Through July 8
1985-1995

District Catch	Cumulative through 7/8 average 1,000s	Percent of season total (%) Average	Low	High
Naknek/Kvichak	6230	56	11	90
Egegik	7194	68	51	90
Nushagak	1999	60	34	87
Togiak	117	31	8	50
Ugashik	1271	29	7	56
All districts	16808	58	43	85

River Escapement	Cumulative through 7/8 average 1,000s	Percent of season total (%) Average	Low	High
Kvichak	3466	56	24	86
Naknek	1208	73	55	86
Egegik	1195	72	58	94
Wood	731	64	24	88
Igushik	201	52	18	75
Togiak	19	7	0	25
Ugashik	90	6	0	19

1991-95 Port Moller sockeye index	7/08 daily	Cumulative through 7/08
only 5 years		
Average		
Lowest	69	1947
Highest	120	3336

Forecast of total run (millions)

No forecast until more years sampled on this date.

1996= ?

Bristol Bay runs 1991-95	
Average	50
Lowest	42
Highest	61

Comments

Bristol Bay catch + escapement through 7/8 has averaged 57% of the final run with a range of 39% in 1986 to 82% in 1993.

The second largest single day escapement of 1.56 million was recorded on this date in 1995.

In an average year, 72% of the Naknek/Kvichak and Egegik runs and 67% of the Nushagak runs have passed through the fishing disctricts by this date.

Through July 9
1985-1995

District Catch	Cumulative through 7/9 average 1,000s	Percent of season total (%) Average	Low	High
Naknek/Kvichak	6862	62	17	93
Egegik	7614	73	63	93
Nushagak	2204	65	39	88
Togiak	132	35	8	59
Ugashik	1684	43	21	67
All districts	18493	64	51	89

River Escapement	Cumulative through 7/9 average 1,000s	Percent of season total (%) Average	Low	High
Kvichak	3901	62	26	90
Naknek	1296	79	68	87
Egegik	1264	76	61	96
Wood	810	73	32	90
Igushik	223	58	20	80
Togiak	24	9	0	29
Ugashik	161	11	0	40

1991-95 Port Moller sockeye index	7/09 daily	Cumulative through 7/09
only 5 years		
Average		
Lowest	43	2034
Highest	89	3424

Forecast of total run (millions)

No forecast until more years sampled on this date.

1996= ?

Bristol Bay runs 1991-95	
Average	50
Lowest	42
Highest	61

Comments

Bristol Bay catch + escapement through 7/9 has averaged 63% of the final run with a range of 48% in 1986 to 86% in 1993.

In the average year, 62% of the final Bristol Bay escapement was accumulated by July 9.

Except in 1985, Togiak escapement counts were under way by this date; and except for 1986, Ugashik escapement counts had begun by this date.

The Ugashik fishery has been open on July 9 each year since 1985 and the average catch has been 413,000 with a range of 212,000 in 1989 to 708,000 in 1986.

Through July 10
1985-1995

District Catch	Cumulative through 7/10 average 1,000s	Percent of season total (%) Average	Low	High	River Escapement	Cumulative through 7/10 average 1,000s	Percent of season total (%) Average	Low	High
Naknek/Kvichak	7478	68	27	94	Kvichak	4308	69	37	92
					Naknek	1367	83	73	90
Egegik	8113	77	63	95	Egegik	1318	79	63	96
Nushagak	2425	71	43	91	Wood	886	77	45	90
					Igushik	244	64	24	82
Togiak	143	39	11	67	Togiak	29	11	0	31
Ugashik	1811	47	21	75	Ugashik	225	16	0	69
All districts	19967	69	57	92					

Port Moller sockeye index	7/10 daily	Cumulative through 7/10	Forecast of total run (millions)
only one year			
Average			
Lowest			
Highest			No forecast from Port Moller available for this date

1996= ?

Bristol Bay runs 1985-95

Average	41
Lowest	23
Highest	61

Comments

Bristol Bay catch + escapement through 7/10 has averaged 68% of the final run with a range of 54% in 1986 to 90% in 1993.

In the average year, 68% of the final Bristol Bay escapement was also accumulated by July 10.

80% of the Egegik and Naknek/Kvichak runs and 78% of the Nushagak runs have passed through the fishing districts by midnight of July 10 with average run timing.

In 9 of the past 10 years the escapement to Egegik through July 10 has exceeded the escapement goal. The same has occurred at Naknek in 6 of the10 years. The escapement goal to Wood River was assured by July 10 in 8 of the past 10 years and in 4 of the years the escapement exceeded the goal.