The 2011 Togiak Herring 1st Spawn/1st Harvest forecast based on Unalaska Sea Surface Temperature (SST)

This forecast is a function of the high correlation between the 1st spawning of Togiak herring (Figure 1) and the 1st harvest of Togiak herring (Figure 2) with the average SST observed at Unalaska between 24 February and 16 March each year. This year the model forecasts are:

- **1st spawn on 28 April 2011**
- **1st harvest on 30 April 2011**

The Unimak SST across the time period of highest predictive power (24 February through 16 March) averaged 4.1° C in 2011, which is on average 0.9° higher than the average daily temperature observed from 1995 through 2010 on those dates (Figure 3).

This model has had a tendency to under forecast (predict earlier dates) in recent years, with forecasted 1st observed spawning forecasted an average of 6 days early in the last 10 years and 9 days early in the last 5 years (Table 1). Similarly, 1st harvest forecast has averaged 3 days early in the last 10 years and 5 days early in the most recent 5 years. Therefore we believe that these forecasts have a higher probability of being early than late, however, it should also be noted that this model assumes average temperatures between 16 March and the fishery.

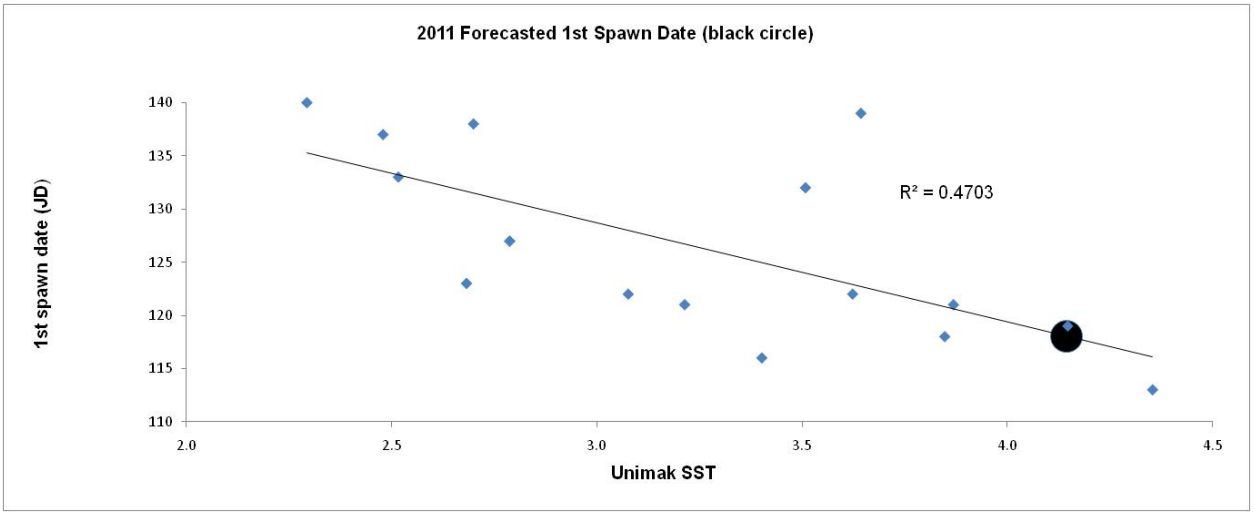

Figure 1. Unimak SST and forecasted 1st spawn date (Julian Day).

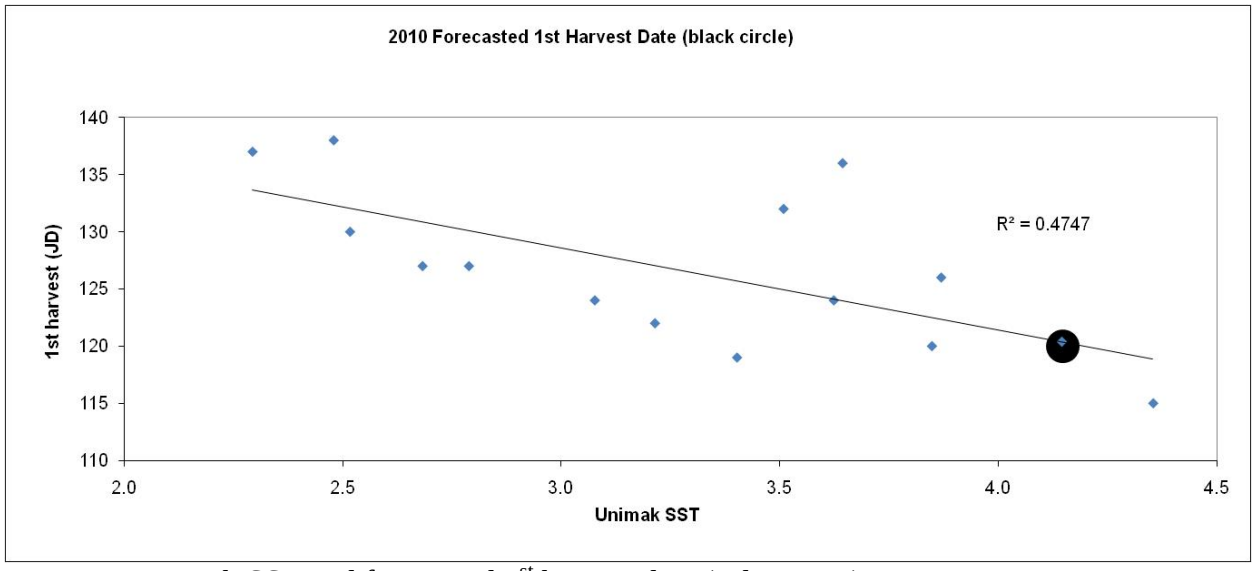

Figure 2. Unimak SST and forecasted 1st harvest date (Julian Day).

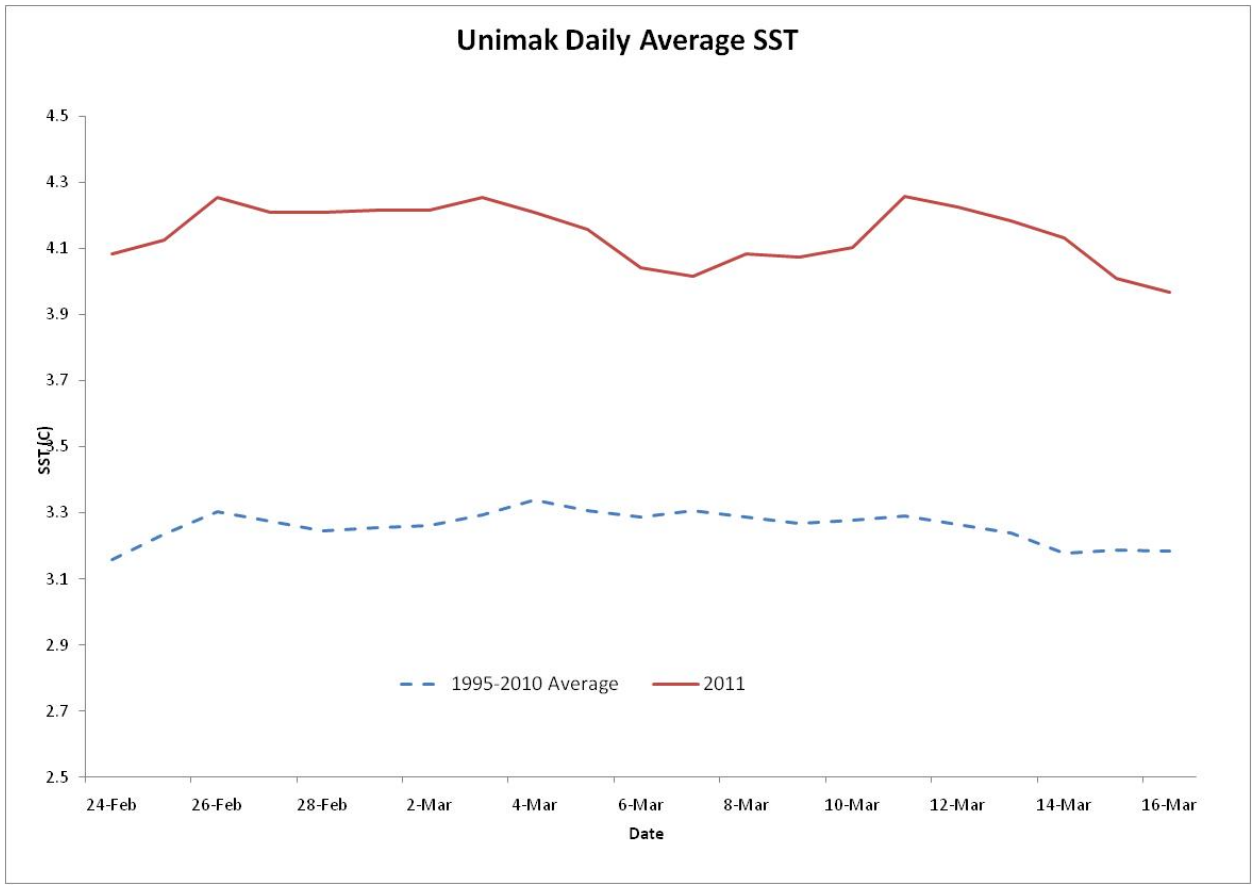

Figure 3. Historical daily average SST at Unimak 24 Feb through 16 Mar (1995-2010) and 2011.

Table 1. Forecasted and observed 1st harvest and 1st spawn (Julian Date).

Year	1st Spawn Pred	1st Spawn Obs	Difference (Days)	1st Harvest Pred	1st Harvest Actual	Difference (Days)
1995	123	123	0	127	127	0
1996	122	122	0	124	124	0
1997	121	121	0	122	122	0
1998	122	116	6	124	119	5
1999	123	137	-14	127	138	-11
2000	127	127	0	130	127	3
2001	114	121	-7	116	126	-10
2002	125	122	3	127	124	3
2003	113	113	0	117	115	2
2004	117	118	-1	120	120	0
2005	115	119	-4	118	120	-2
2006	121	132	-11	123	132	-9
2007	130	133	-3	131	130	1
2008	132	140	-8	132	136	-4
2009	121	139	-18	123	136	-13
2010	131	138	-7	131	131	0
2011	**118**			**120**		
5 yr Avg (2006-2010)	**127**	**136**	**-9**	**128**	**133**	**-5**
10 yr Avg (2001-2010)	**122**	**128**	**-6**	**124**	**127**	**-3**