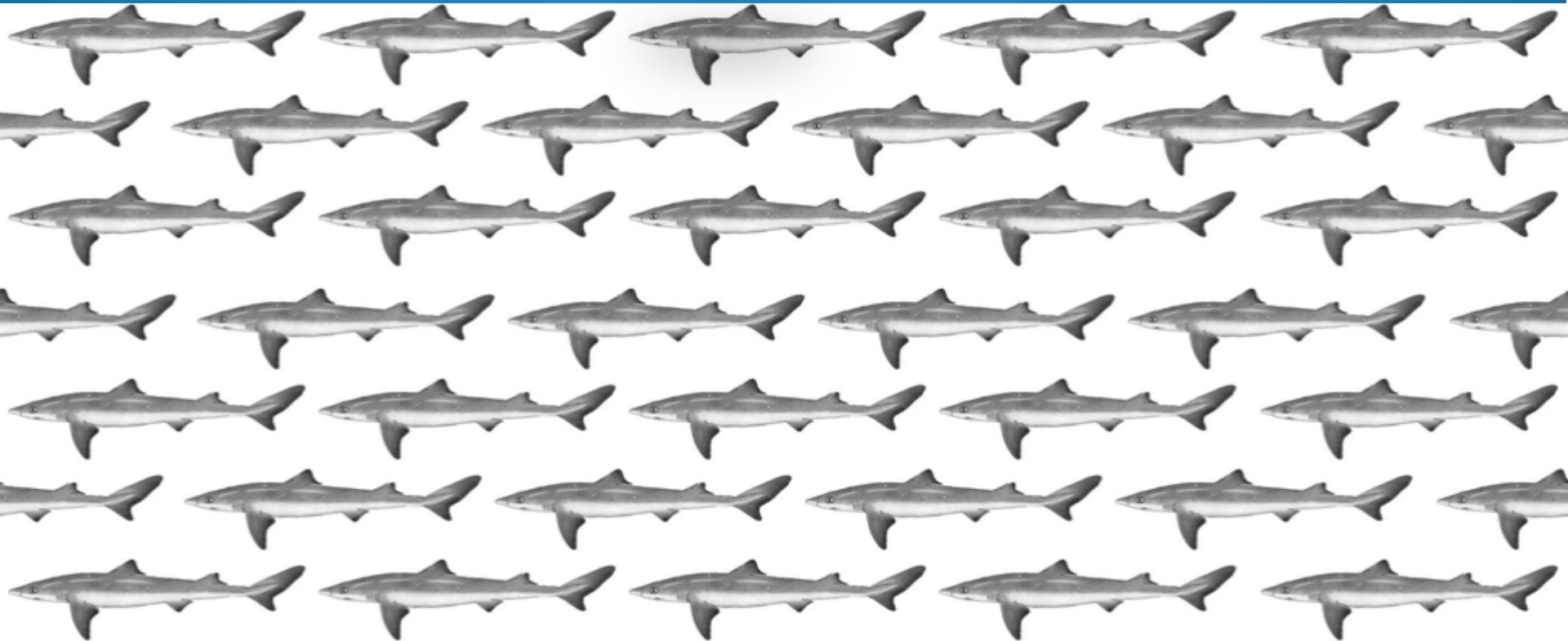
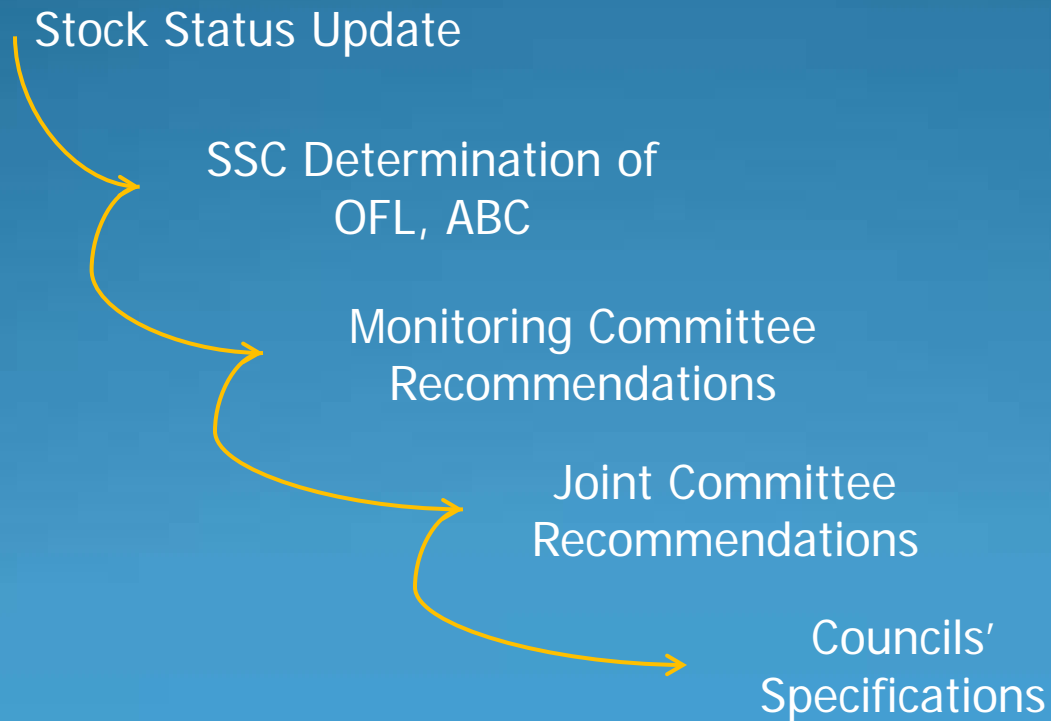


# Spiny Dogfish



# Process

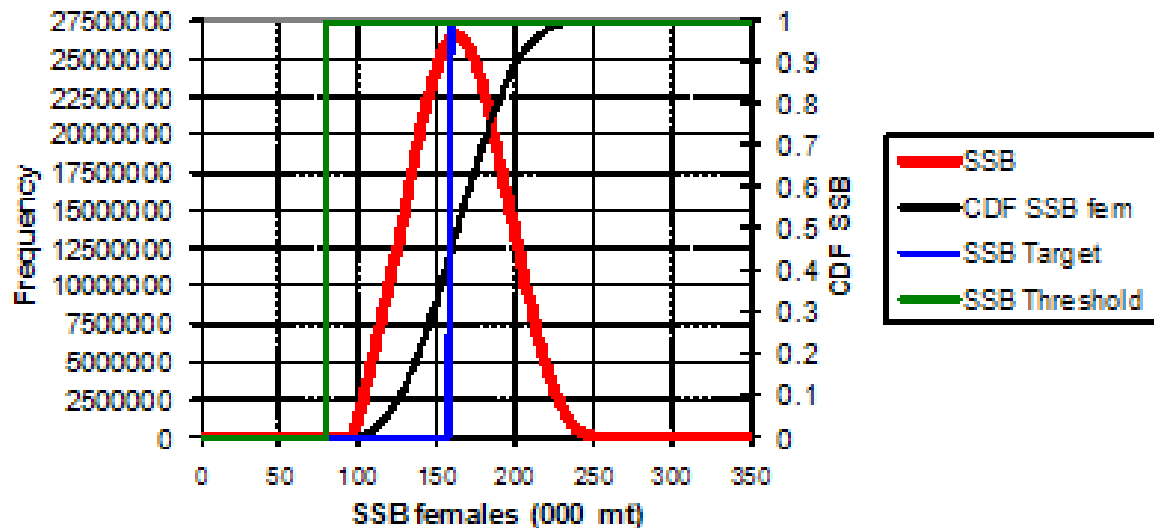


# Stock Status

- Not overfished, overfishing not occurring
- SSB and F stable for now
- Biomass<sub>2010</sub>: 164,066mt (SSB<sub>MAX</sub>: 159,088 mt)
- F<sub>2009</sub>: 0.11 (F<sub>MSY</sub>: 0.325)

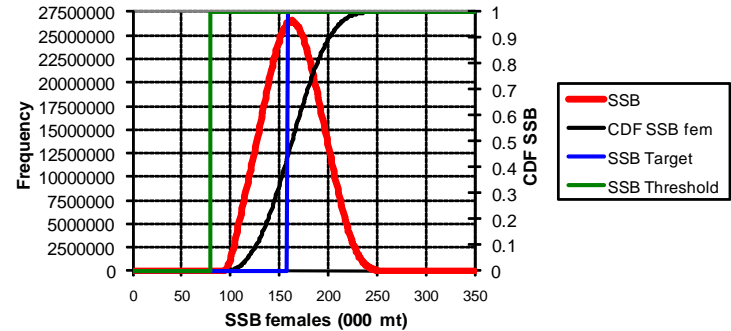
# SSB<sub>2010</sub>

Stochastic Estimate of Spawning Stock Biomass with nominal target and threshold biomasses, 2010

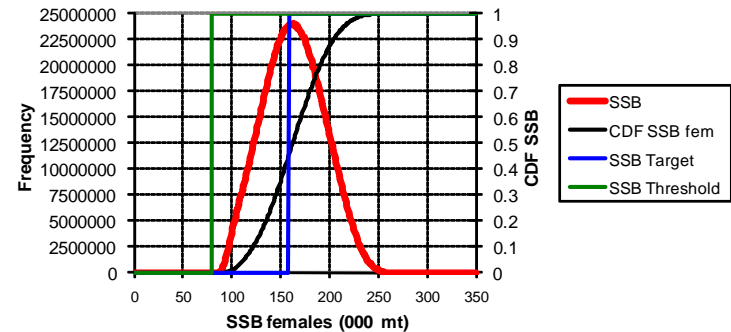


# SSB<sub>2008 - 2010</sub>

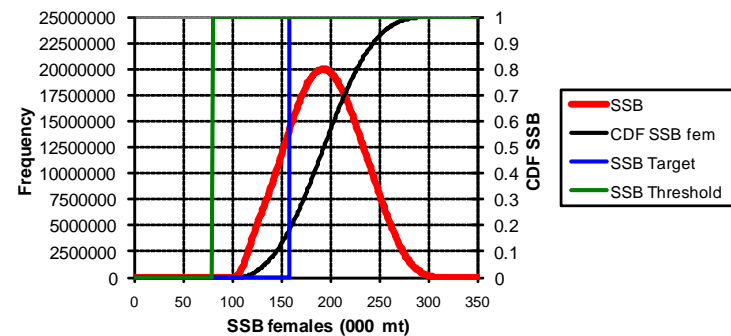
Stochastic Estimate of Spawning Stock Biomass with nominal target and threshold biomasses, 2010



Stochastic Estimate of Spawning Stock Biomass with nominal target and threshold biomasses, 2009

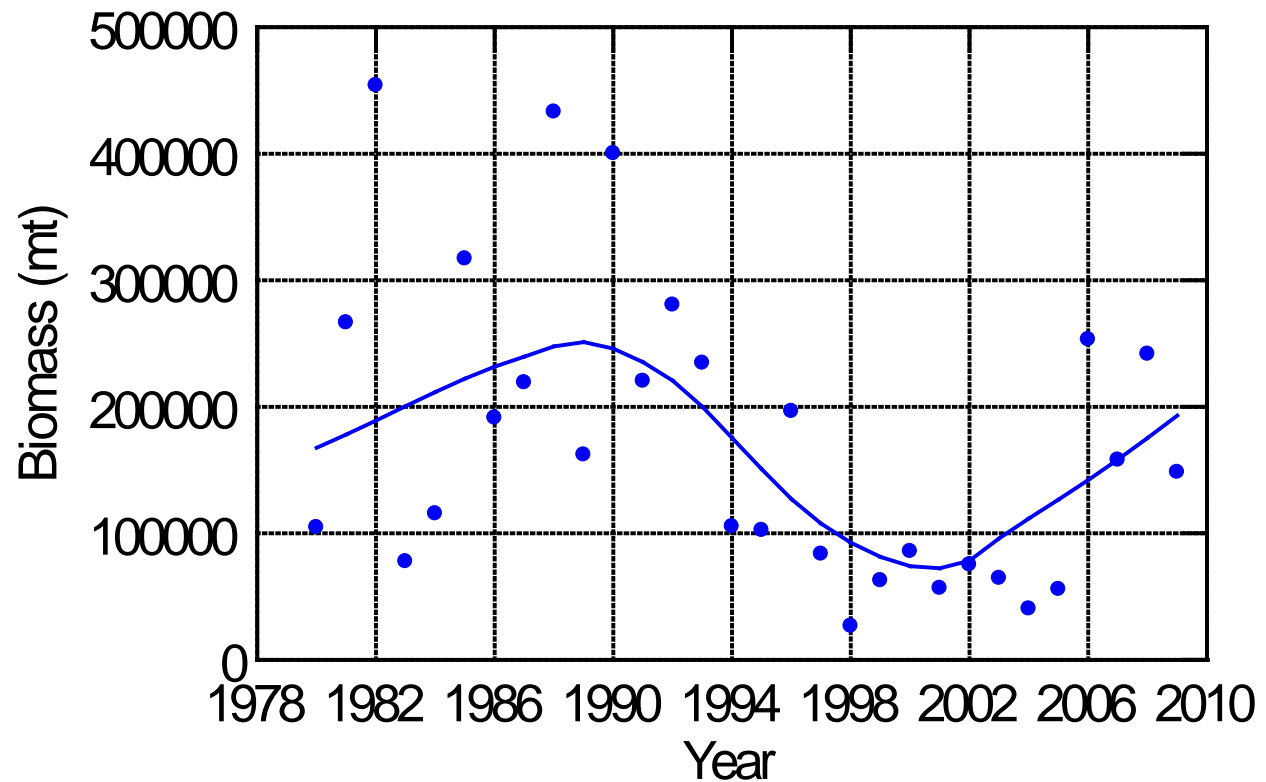


Stochastic Estimate of Spawning Stock Biomass with nominal target and threshold biomasses, 2008



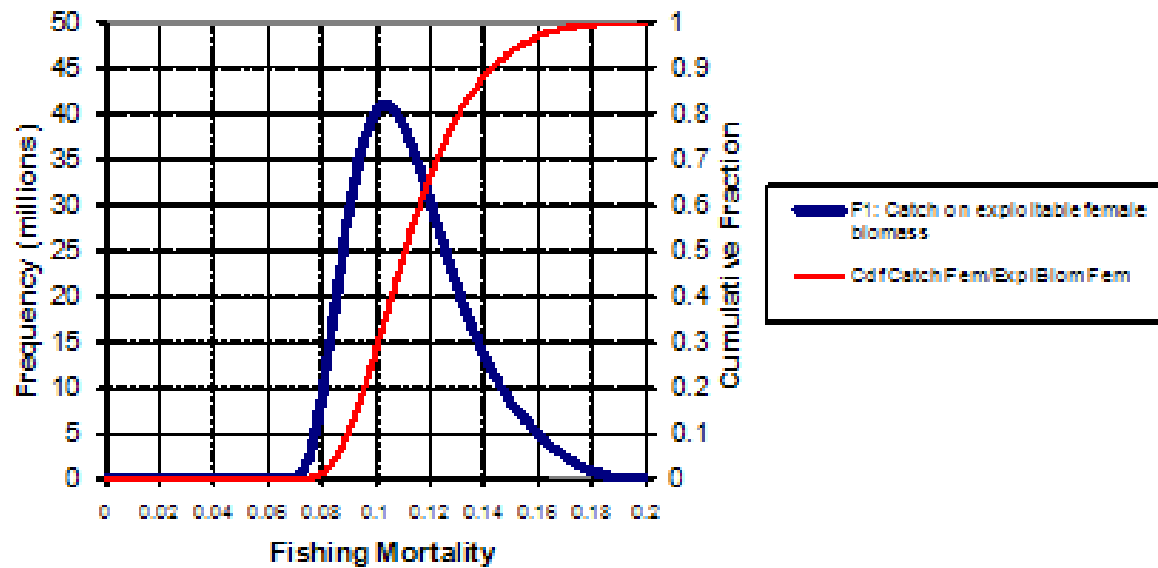
# SSB<sub>Hx</sub>

Female Spawning Stock ( $\geq 80$  cm) (mt)



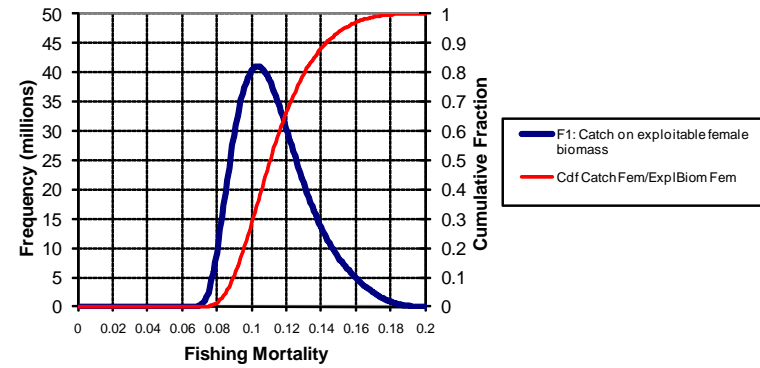
# F<sub>2009</sub>

F1: Female Catch vs exploitable biomass: 2009

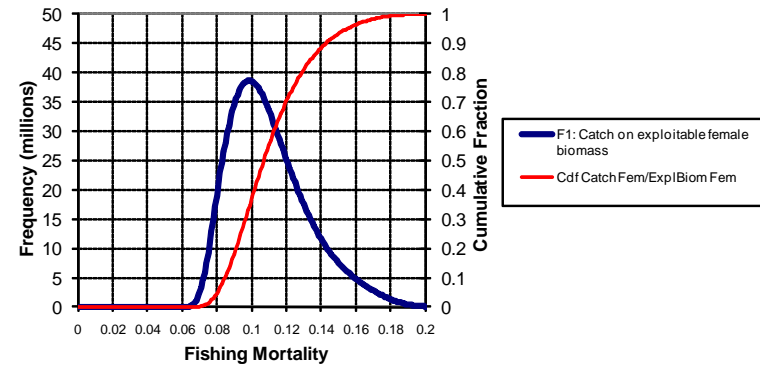


# F 2007 - 2009

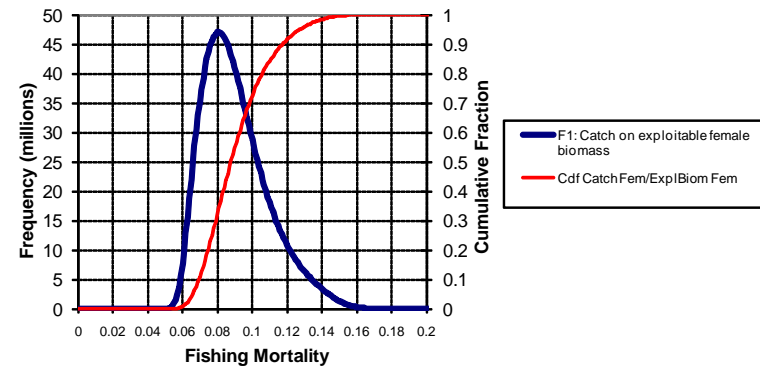
F1: Female Catch vs exploitable biomass: 2009



F1: Female Catch vs exploitable biomass: 2008

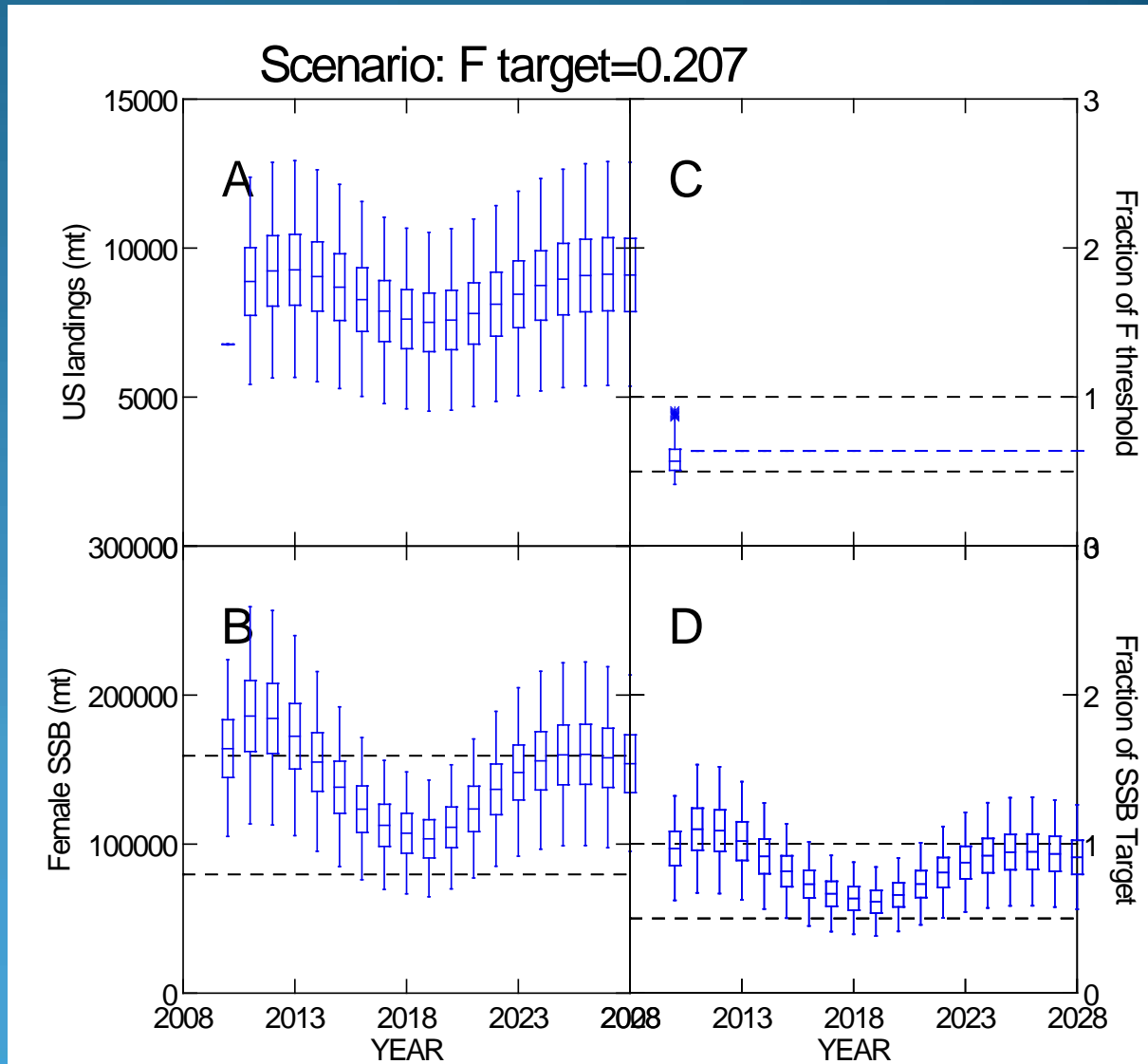


F1: Female Catch vs exploitable biomass: 2007

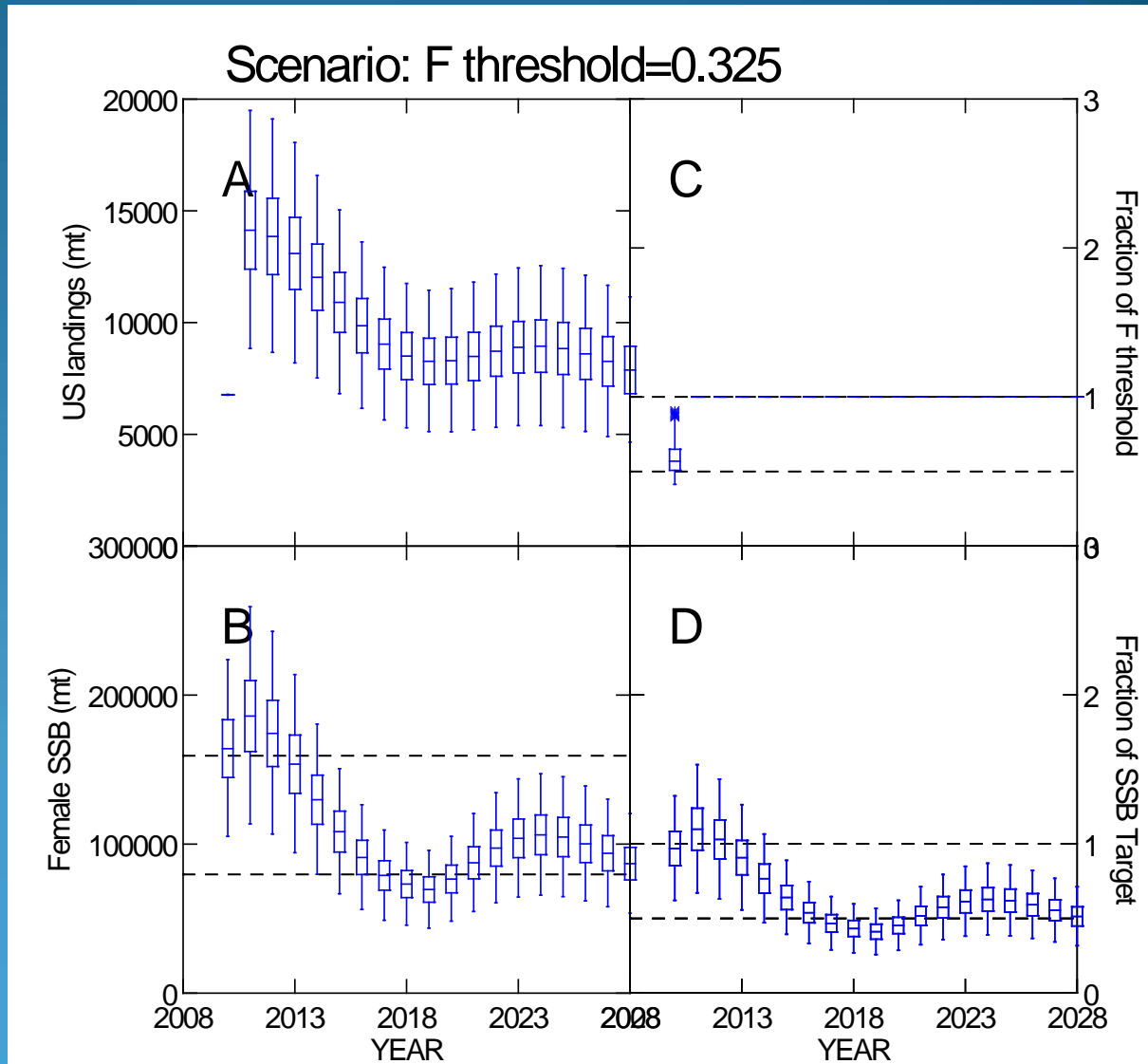




# Projections



# Projections



# Projections (OFL)

Scenario = Ftarget															
Year	Average											Probability			
	F on females	F on males	SSB (mt)	Total Catch (mt)	Total Landing (mt)	Female Landings (mt)	Male Landings (mt)	Total Discards (mt)	Female Discards (mt)	Male Discards (mt)	SSB(t)/SSB_target	SSB<SSB_target	SSB<SSB_thres_h	F>Fthresh	F>Ftarget
2010	0.190629	0.00559	164,111	15,387	7,720	7,205	516	7,667	6,088	1,579	0.970	0.570	0.000	0.000	0.284
2011	0.207	0.01068	185,976	20,267	9,830	8,870	961	10,437	7,495	2,943	1.099	0.320	0.000	0.000	1.000
2012	0.207	0.01068	184,367	20,861	10,187	9,256	931	10,673	7,822	2,852	1.089	0.334	0.000	0.000	1.000
2013	0.207	0.01068	172,399	20,865	10,224	9,321	902	10,641	7,876	2,765	1.019	0.462	0.000	0.000	1.000
2014	0.207	0.01068	155,112	20,397	9,998	9,119	879	10,399	7,705	2,694	0.916	0.686	0.000	0.000	1.000
2015	0.207	0.01068	138,183	19,701	9,641	8,779	862	10,060	7,419	2,641	0.816	0.890	0.000	0.000	1.000
2016	0.207	0.01068	123,480	18,897	9,222	8,373	849	9,675	7,076	2,600	0.730	0.992	0.032	0.000	1.000
2017	0.207	0.01068	112,623	18,160	8,837	8,001	836	9,323	6,761	2,561	0.665	1.000	0.084	0.000	1.000
2018	0.207	0.01068	107,287	17,625	8,567	7,747	820	9,058	6,546	2,512	0.634	1.000	0.122	0.000	1.000
2019	0.207	0.01068	103,534	17,383	8,459	7,659	800	8,924	6,472	2,452	0.612	1.000	0.156	0.000	1.000
2020	0.207	0.01068	111,299	17,479	8,537	7,757	779	8,942	6,555	2,387	0.658	1.000	0.086	0.000	1.000
2021	0.207	0.01068	123,596	17,838	8,757	8,000	757	9,080	6,760	2,320	0.730	0.996	0.028	0.000	1.000
2022	0.207	0.01068	136,770	18,363	9,068	8,332	736	9,295	7,041	2,254	0.808	0.908	0.000	0.000	1.000
2023	0.207	0.01068	148,062	18,933	9,402	8,687	715	9,531	7,340	2,191	0.875	0.782	0.000	0.000	1.000
2024	0.207	0.01068	155,898	19,432	9,695	8,999	696	9,737	7,605	2,132	0.921	0.678	0.000	0.000	1.000
2025	0.207	0.01068	159,892	19,788	9,909	9,229	679	9,880	7,799	2,081	0.945	0.624	0.000	0.000	1.000
2026	0.207	0.01068	160,242	19,981	10,030	9,364	666	9,952	7,913	2,039	0.947	0.618	0.000	0.000	1.000
2027	0.207	0.01068	157,907	20,038	10,073	9,418	655	9,965	7,958	2,007	0.933	0.650	0.000	0.000	1.000
2028	0.207	0.01068	153,964	19,976	10,048	9,400	648	9,928	7,943	1,985	0.910	0.702	0.000	0.000	1.000
2029	0.207	0.01068	149,284	19,852	9,986	9,343	643	9,866	7,895	1,971	0.882	0.764	0.000	0.000	1.000
2030	0.207	0.01068	145,387	19,728	9,922	9,281	641	9,806	7,843	1,963	0.859	0.814	0.000	0.000	1.000
2031	0.207	0.01068	143,230	19,655	9,884	9,245	639	9,770	7,813	1,957	0.846	0.840	0.000	0.000	1.000
2032	0.207	0.01068	143,343	19,667	9,893	9,255	638	9,774	7,821	1,953	0.847	0.838	0.000	0.000	1.000
2033	0.207	0.01068	145,507	19,779	9,955	9,319	636	9,824	7,874	1,950	0.860	0.812	0.000	0.000	1.000
2034	0.207	0.01068	149,263	19,981	10,066	9,431	635	9,915	7,970	1,945	0.882	0.766	0.000	0.000	1.000
2035	0.207	0.01068	153,807	20,248	10,213	9,580	633	10,035	8,095	1,940	0.909	0.706	0.000	0.000	1.000
2036	0.207	0.01068	158,458	20,550	10,379	9,747	632	10,171	8,237	1,935	0.936	0.644	0.000	0.000	1.000
2037	0.207	0.01068	162,558	20,853	10,545	9,914	630	10,308	8,378	1,931	0.960	0.588	0.000	0.000	1.000
2038	0.207	0.01068	165,692	21,129	10,695	10,066	629	10,434	8,506	1,928	0.979	0.546	0.000	0.000	1.000
2039	0.207	0.01068	167,643	21,363	10,822	10,193	629	10,541	8,613	1,928	0.991	0.522	0.000	0.000	1.000
Grand Total	0.206454	0.01051	147,962	19,473	9,685	8,963	722	9,787	7,574	2,213	0.874	0.735	0.017	0.000	0.976
Ave '10-19	0.205	0.010	144,707	18,954	9,269	8,433	836	9,686	7,126	2,560	0.855	0.725	0.039	0.000	0.928
Ave '20-29	0.207	0.011	145,691	19,168	9,550	8,853	698	9,618	7,481	2,137	0.861	0.772	0.011	0.000	1.000
Ave '30-39	0.207	0.011	153,489	20,295	10,237	9,603	634	10,058	8,115	1,943	0.907	0.708	0.000	0.000	1.000
Formula	A	B	C	D=E+H	E=F+G	F	G	H=I+J	I	J	K	L	M	N	O

# Projections (OFL)

Year	F on females	F on males	SSB (mt)	Total Catch (mt)
2011	0.207	0.01068	185,976	20,267
2012	0.207	0.01068	184,367	20,861
2013	0.207	0.01068	172,399	20,865
2014	0.207	0.01068	155,112	20,397
2015	0.207	0.01068	138,183	19,701

# Projections OFL, ABC

Year	F on females	F on males	SSB (mt)	Total Catch (mt)
2011	0.207	0.01068	185,976	20,267
2012	0.207	0.01068	184,367	20,861
2013	0.207	0.01068	172,399	20,865
2014	0.207	0.01068	155,112	20,397
2015	0.207	0.01068	138,183	19,701

Year	75% (OFL) = ABC	
	mt	lbs
<b>2011</b>	15,200	33,510,815
<b>2012</b>	15,646	34,492,974
<b>2013</b>	15,649	34,499,588
<b>2014</b>	15,298	33,725,766
<b>2014</b>	14,776	32,574,953

# TAL

TAL = ABC - Other Removals

- Discards
- Canadian harvest
- Rec removals

# TAL

Year	U.S. Landings	Discards	Can Landings	Rec Landings
1995	22578	10932	956	68
1996	27136	6025	431	25
1997	18351	4366	446	66
1998	20628	3435	1055	39
1999	14855	4581	2091	53
2000	9257	2917	2741	5
2001	2294	5063	3820	28
2002	2199	5049	3584	205
2003	1170	4225	1302	40
2004	982	6146	2362	105
2005	1147	5589	2270	45
2006	2249	5688	2439	94
2007	3503	6510	2384	84
2008	4108	5088	1572	214
2009	5377	5897	113	34
ave 07-09	4,329	5,832	1,356	111
ave 08-09	4,743	5,493	843	124
	Reduction Basis	Ave 2007-2009	Ave 2008-2009	2009
2011	F75%Catch (ABC)	15,200		
	Landings	9,368	9,708	9,303
	Comm Quota mt	7,901	8,741	9,156
	Comm Quota lbs	17,419,458	19,270,606	20,185,525

# Discards

	Otter Trawl	Sink Gill Net	Scallop Dredge	Line gear	Recreational
2000	1,364	1,405	11	na	137
2001	2,460	2,161	23	na	420
2002	2,770	1,499	44	402	335
2003	1,927	1,624	77	0	597
2004	4,150	1,209	40	50	698
2005	3,758	1,001	11	118	702
2006	3,886	1,011	10	13	768
2007	4,058	1,540	45	7	860
2008	2,802	1,459	178	26	623
2009	3,505	1,462	273	84	574

# Landings

**Table 6. Commercial gear types associated with spiny dogfish harvest in FY2008.**

Commercial Gear Type	Landings (1,000s lbs)	Pct Total
GILL NET	6,122,027	68.2%
HOOK AND LINE	1,364,636	15.2%
UNKNOWN	693,538	7.7%
TRAWL OTTER,BOTTOM	442,469	4.9%
OTHER	352,516	3.9%
TOTAL	8,975,186	100.0%

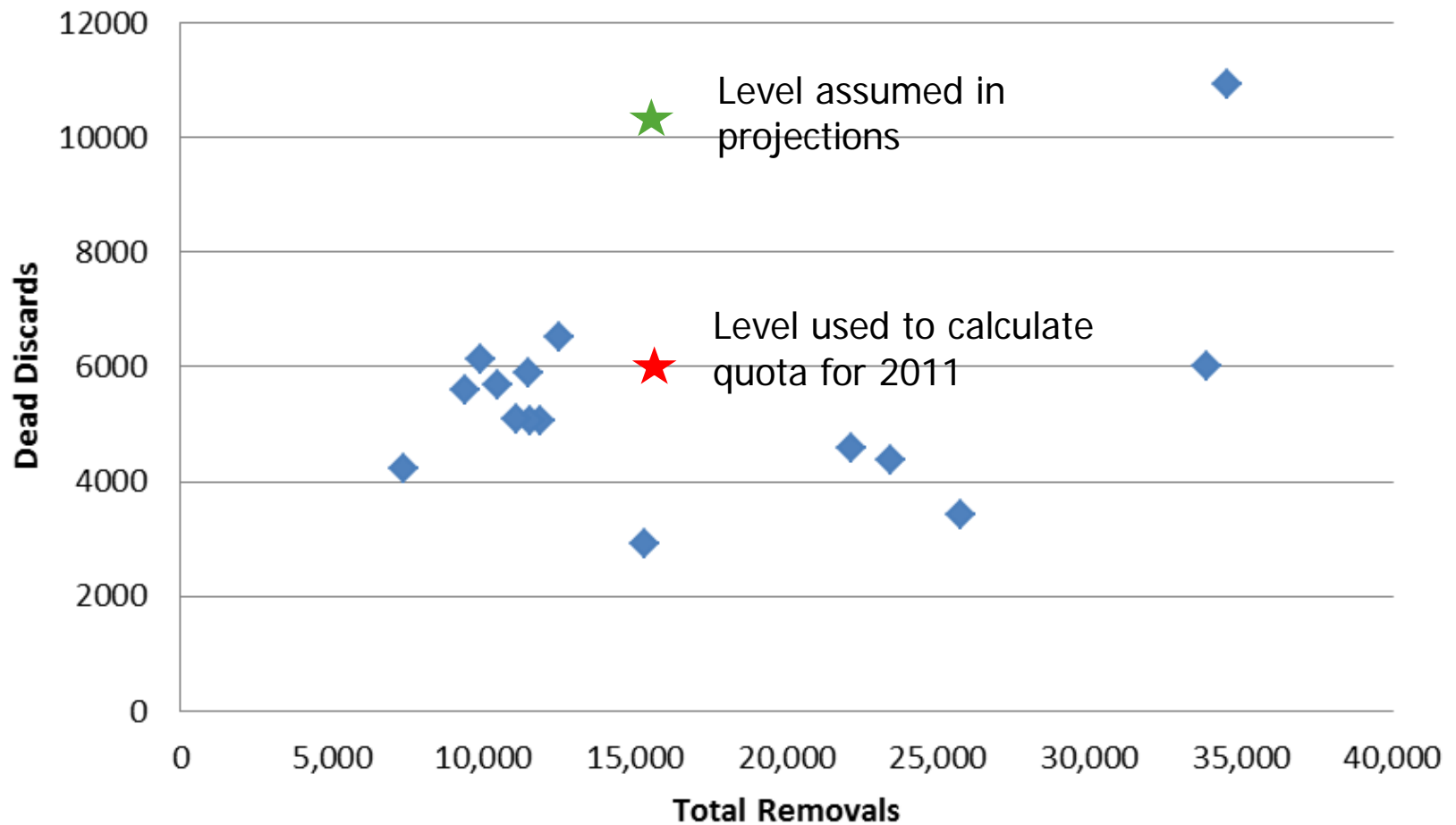


# Discards

- Factors
  - Level assumed in projection is unrealistic
  - Majority occurs in trawl fisheries that don't land dogfish
  - Decreased trawl effort relative to previous years

# Discards

Dead Disc vs Total Removals 1995 - 2009



# Summary of MC, JC, MAFMC, ASMFC recommendations

- TAL : 20.0 M lb
- Trip limit : 3,000 lb
- Timespan: 1 year