Update of Catch and Survey Data for Shortfin *Illex illecebrosus* and Longfin *Doryteuthis* (*Amerigo*) *pealeii* Squid through 2012.

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The following information addresses the request by Dr. Chris Moore (Executive Director, MAFMC), in his January 3, 2013 letter to Dr. Bill Karp, regarding the 2012 landings and NEFSC fall survey indices of relative abundance and biomass for *Illex illecebrosus* and *Doryteuthis* (*Amerigo*) *pealeii*.

Illex illecebrosus

I. illeceborus landings, by domestic and foreign fleets, within the US EEZ during 1963-2012 are presented in Table 1. During 2012 were 11,709 mt, which is 52% of the 2012 quota (22,445 mt).

Indices of relative abundance and biomass were derived using data from NEFSC fall bottom trawl surveys conducted during 1967-2012 (Table 2). The H. B. Bigelow replaced the Albatross IV as the survey vessel beginning in 2009. Indices for 2009 onward were converted to Albatross IV units using fall conversion factors (Miller et al. 2010) and the CVs account for the variance associated with the conversion factors. During 2012, indices of relative abundance and biomass were 8 squid per tow (% CV = 17) and 0.54 kg per tow (% CV = 15), respectively. The 2012 abundance index increased slightly and was equal to the time series median (Fig. 1). NEAMAP survey indices for the inshore strata (generally depths ≤ 18 m) which are no longer sampled during NEFSC surveys were not computed because *Illex* catches in the NEAMAP surveys are rare.

Doryteuthis (Amerigo) pealeii

D. (Amerigo) pealeii landings, by domestic and foreign fleets, within the US EEZ are presented in Table 3. During 2012, landings were 12,720 mt, which is 56% of the 2012 quota (22,915 mt).

Indices of relative abundance and biomass were derived using daytime tows (solar zenith angles of 43°-80°) from NEFSC fall bottom trawl surveys conducted during 1975-2012 (Table 4). The inshore strata set used to computed the indices does not include the strata that can no longer be sampled by the NEFSC survey vessel (generally ≤ 18 m), the H. B. Bigelow, which replaced the Albatross IV in 2009. Indices for 2009 onward were converted to Albatross IV units using fall survey daytime conversion factors (NEFSC 2010) and the CVs account for the variance associated with the conversion factors. During 2012, indices of relative abundance and biomass were 1,371 squid per tow (% CV = 11) and 21.0 kg per tow (% CV = 9), respectively. The 2012 abundance index increased and was well above the time series median of 625 squid per tow (Fig. 2).

Indices of relative abundance (stratified geometric mean number per tow) and biomass (stratified geometric mean kg per tow) were also derived by VIMS staffs who conduct the fall NEAMAP bottom trawl surveys (Table 5). The survey was conducted between sunrise and sunset, during 2007-2012, and covers the inshore strata that can no longer be sampled by the NEFSC survey vessel, the H. B. Bigelow (i.e., strata ≤ 18 m deep). During 2012, relative abundance and biomass indices for the fall NEAMAP survey were 59 squid per tow and 3.1 kg per tow, respectively. The 2012 abundance index was slightly above the time series median of 48 squid per tow (Fig. 3).

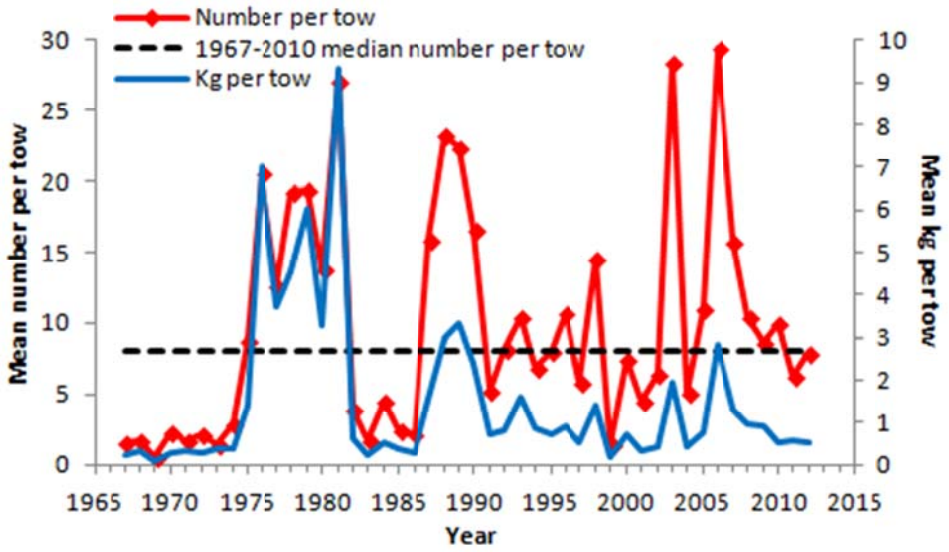

Figure 1. *Illex illecebrosus* indices of relative abundance (stratified mean number per tow) and biomass (stratified mean kg per tow) derived from NEFSC fall bottom trawl surveys conducted during 1967-2012.

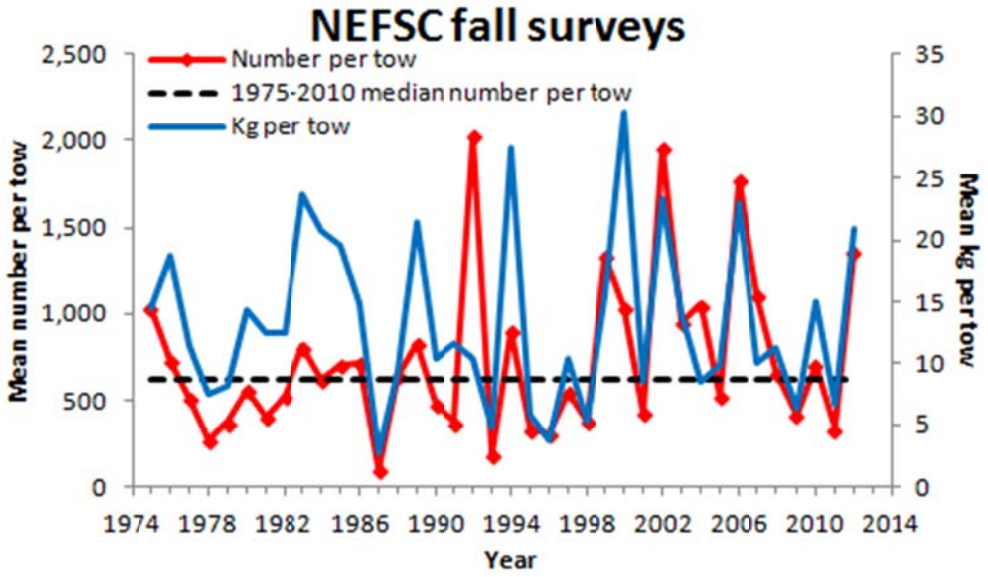

Figure 2. *Doryteuthis* (*Amerigo*) *pealeii* indices of relative abundance (stratified mean number per tow) and biomass (stratified mean kg per tow) derived using daytime tows (solar zenith angles of 43°-80°) from NEFSC fall bottom trawl surveys conducted during 1975-2012. The time series of indices was derived using only the strata that can be sampled by H. B. Bigelow (18-366 m depth).

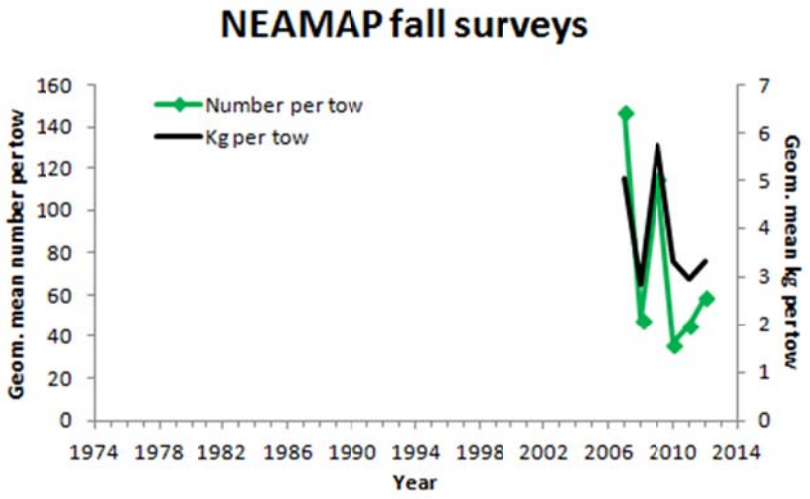

Figure 3. *Doryteuthis* (*Amerigo*) *pealeii* indices of relative abundance (stratified geometric mean number per tow) and biomass (stratified geometric mean kg per tow) derived by VIMS staff with data from the fall NEAMAP bottom trawl surveys conducted during 2007-2012.

Table 1. US EEZ landings of *Illex illecebrosus*, by US and foreign fleets, during 1963-2012.

Year	US	Foreign	Total
1963	810		810
1964	358	2	360
1965	444	78	522
1966	452	118	570
1967	707	288	995
1968	678	2,593	3,271
1969	562	975	1,537
1970	408	2,418	2,826
1971	455	6,159	6,614
1972	472	17,169	17,641
1973	530	18,625	19,155
1974	148	20,480	20,628
1975	107	17,819	17,926
1976	229	24,707	24,936
1977	1,024	23,771	24,795
1978	385	17,207	17,592
1979	1,493	15,748	17,241
1980	299	17,529	17,828
1981	615	14,956	15,571
1982	5,871	12,762	18,633
1983	9,775	1,809	11,584
1984	9,343	576	9,919
1985	5,033	1,082	6,115
1986	6,493	977	7,470
1987	10,102	0	10,102
1988	1,958	0	1,958
1989	6,801	0	6,801
1990	11,670	0	11,670
1991	11,908	0	11,908
1992	17,827	0	17,827
1993	18,012	0	18,012
1994	18,350	0	18,350
1995	13,976	0	13,976
1996	16,969	0	16,969
1997	13,356	0	13,356
1998	23,568	0	23,568
1999	7,388	0	7,388
2000	9,011	0	9,011
2001	4,009	0	4,009
2002	2,750	0	2,750
2003	6,391	0	6,391
2004	26,097	0	26,097
2005	12,011	0	12,011
2006	13,944	0	13,944
2007	9,022	0	9,022
2008	15,900	0	15,900
2009	18,418	0	18,418
2010	15,825	0	15,825
2011	18,797	0	18,797
2012	11,709	0	11,709

Table 2. *Illex illecebrosus* relative abundance (stratified mean number per tow) and biomass (stratified mean kg per tow) indices for NEFSC fall bottom trawl surveys, 1967-2012.

Year	All sizes (Number per tow)	%CV	All sizes (Kg per tow)	%CV
1967	1.6	17	0.24	17
1968	1.6	21	0.31	17
1969	0.6	23	0.07	26
1970	2.3	21	0.27	15
1971	1.7	12	0.34	14
1972	2.2	25	0.29	15
1973	1.5	24	0.35	25
1974	2.8	40	0.39	30
1975	8.7	36	1.42	18
1976	20.6	16	7.02	19
1977	12.6	18	3.74	18
1978	19.3	21	4.53	26
1979	19.4	11	6.05	11
1980	13.8	15	3.29	18
1981	27.1	32	9.34	40
1982	3.9	15	0.60	13
1983	1.7	14	0.23	13
1984	4.5	17	0.52	19
1985	2.4	17	0.36	18
1986	2.1	15	0.26	17
1987	15.8	31	1.53	29
1988	23.2	25	3.00	24
1989	22.4	45	3.31	57
1990	16.6	12	2.40	13
1991	5.2	17	0.69	18
1992	8.2	15	0.80	16
1993	10.4	19	1.60	20
1994	6.8	24	0.86	25
1995	8.0	30	0.70	39
1996	10.8	22	0.93	19
1997	5.8	25	0.52	17
1998	14.6	29	1.40	50
1999	1.4	16	0.19	17
2000	7.4	28	0.71	22
2001	4.5	27	0.32	23
2002	6.4	20	0.44	19
2003	28.5	61	1.95	67
2004	5.1	24	0.41	22
2005	11.0	35	0.74	41
2006	29.5	43	2.85	31
2007	15.7	33	1.31	33
2008	10.4	22	0.98	20
2009	8.7	18	0.93	21
2010	10.0	23	0.53	23
2011	6.3	20	0.54	20
2012	8.0	17	0.54	15

Table 3. US EEZ landings of *Doryteuthis (Amerigo) pealeii*, by US and foreign fleets, during 1963-2012.

Year	US	Foreign	Total
1963	1,294	0	1,294
1964	576	2	578
1965	709	99	808
1966	722	226	948
1967	547	1,130	1,677
1968	1,084	2,327	3,411
1969	899	8,643	9,542
1970	653	16,732	17,385
1971	727	17,442	18,169
1972	725	29,009	29,734
1973	1,105	36,508	37,613
1974	2,274	32,576	34,850
1975	1,621	32,180	33,801
1976	3,602	21,682	25,284
1977	1,088	15,586	16,674
1978	1,476	9,355	10,831
1979	4,252	13,068	17,320
1980	3,996	19,750	23,746
1981	2,316	20,212	22,528
1982	2,848	15,805	18,653
1983	10,867	11,720	22,587
1984	7,689	11,031	18,720
1985	6,899	6,549	13,448
1986	11,525	4,598	16,123
1987	10,367	2	10,369
1988	18,593	3	18,596
1989	23,733	5	23,738
1990	15,399	0	15,399
1991	20,299	0	20,299
1992	19,018	0	19,018
1993	23,020	0	23,020
1994	23,480	0	23,480
1995	18,880	0	18,880
1996	12,503	0	12,503
1997	16,270	0	16,270
1998	19,145	0	19,145
1999	19,173	0	19,173
2000	17,540	0	17,540
2001	14,345	0	14,345
2002	16,868	0	16,868
2003	11,941	0	11,941
2004	15,629	0	15,629
2005	16,720	0	16,720
2006	15,920	0	15,920
2007	12,343	0	12,343
2008	11,394	0	11,394
2009	9,307	0	9,307
2010	6,750	0	6,750
2011	9,556	0	9,556
2012	12,720	0	12,720

Table 4. Relative abundance (stratified mean number per tow) and biomass (stratified mean kg per tow) indices for *Doryteuthis (Amerigo) pealeii* caught, during daytime tows (solar zenith angles of 43°-80°), in NEFSC fall bottom trawl surveys during 1975-2012. The survey strata set includes offshore strata 1-23, 25-26, and 61-76 plus inshore strata deeper than 18 m.

Year	Number per tow	%CV	Kg per tow	%CV
1975	1,038	14	14.4	11
1976	730	12	18.8	15
1977	513	14	11.5	18
1978	270	16	7.6	11
1979	376	12	8.2	12
1980	562	13	14.2	8
1981	402	10	12.5	6
1982	529	13	12.4	15
1983	814	14	23.7	20
1984	625	10	20.8	17
1985	709	15	19.6	11
1986	720	13	14.8	4
1987	101	9	2.8	9
1988	651	14	9.3	13
1989	830	25	21.5	34
1990	480	12	10.4	14
1991	375	12	11.5	10
1992	2,029	27	10.4	20
1993	185	26	4.9	10
1994	905	11	27.5	15
1995	340	15	5.8	8
1996	306	18	3.8	20
1997	548	21	10.3	22
1998	381	14	5.3	14
1999	1,341	10	15.4	10
2000	1,035	12	30.4	7
2001	431	11	8.5	8
2002	1,960	4	23.4	5
2003	951	8	14.0	11
2004	1,055	14	8.6	10
2005	530	14	9.9	20
2006	1,778	10	22.9	6
2007	1,111	17	10.1	18
2008	667	18	11.3	25
2009	416	9	6.3	13
2010	708	21	15.0	12
2011	339	16	6.6	12
2012	1,371	11	21.0	9

Table 5. Relative abundance (stratified geometric mean number per tow) and biomass (stratified geometric mean kg per tow) indices for *Doryteuthis (Amerigo) pealeii* caught in NEAMAP fall bottom trawl surveys during 2007-2012.

Year	LCI	Geometric mean number per tow	UCI	LCI	Geometric mean kg per tow	UCI
2007	120	147	180	4.2	5.0	6.0
2008	38	48	61	2.4	2.8	3.3
2009	90	115	147	4.9	5.7	6.7
2010	29	37	47	2.8	3.3	3.9
2011	37	45	55	2.6	3.0	3.4
2012	48	59	72	2.9	3.3	3.8