#1/A

Monkfish PDT Report based on agenda items for 4/28/09 & 5/13/09

1) Confirm for SSC the calculations of MSY and OFL using exploitable biomass.

   The PDT updated calculations of OFL and MSY using current exploitable biomass, rather than total biomass, as had been presented at the last SSC meeting. OFL is an annual limit derived as the product of current exploitable biomass and $F_{threshold}$. In this case, the most recent estimate of biomass is the one from the Data Poor Working Group (DPWG) assessment for 2006. MSY is a long-term average value derived as the product of B_{target} and $F_{threshold}$. The DPWG calculated B_{target} the average of *total* biomass 1980-2006, but for the purpose of determining MSY, *exploitable* biomass needs to be used. For the Northern area, the SCALE model input maintained a consistent selectivity pattern throughout the time series, but for the Southern area, three different selectivity patterns were applied to reflect changes in predominant gears during the period. As a result, the PDT recalculated B_{target} as exploitable biomass by applying the selectivity pattern during the most recent period to the entire time series (Table 1 and Figure 1).

   The results of the calculations are shown in Table 2. **MSY values are 17,053 mt and 25,487 mt for Northern and Southern areas, respectively. OFL values are 22,729 mt and 28,263 mt, North and South.**

2) Review and confirm calculations of ABC based on the method recommended by the SSC.

   The SSC recommended that an interim ABC should be derived as the product of the average exploitation rate during the recent period of stable or increasing trend in biomass for each management unit and the most recent estimate of exploitable biomass. The PDT reviewed the SCALE model results from the 2007 assessment and determined that the period 1999-2006 and 2000-2006 be used for northern and southern management areas, respectively. The starting years are those where the first increase was observed (see **Error! Reference source not found.**). The calculations produced values for **ABC of 17,485 mt (North) and 13,326 mt (South).** These resulted in buffers between OFL and ABC of 5,234 mt (North) and 14,930 mt (South), or 23% and 53% of the respective OFL values (Table 4).

3) Discuss the two options for ACT – pros and cons. For the bottom-up method, what is a recommended precautionary increase in TTAC (ACT), and why? For the top-down method, what is a recommended buffer from ACL to account for management uncertainty, and why?

   At the previous meeting, the PDT discussed, but did not develop a final recommendation on one method of calculating the ACT over the other, but rather outlined some of the pros and cons of each. In the end, the PDT concluded that a blended approach might overcome some of the difficulties associated with either method, namely establishing an objective and quantifiable accounting of management uncertainty. On the bottom-up approach, the PDT noted that it provides a greater

degree of certainty than the top-down approach because the value does not depend on the outcome of the 2010 assessment. The PDT considered providing a range of options to the Committee for consideration. Table 5 shows ACT options using the bottom-up approach based on incremental increases of 20%, 50% and 100% in the current TACs plus estimated discards, and also shows the resulting buffer between ACTs and ACLs.

At the 5/13/09 meeting, the PDT continued its discussion of ACT methods, with the objective of providing the Committee with some recommendations. Members agreed that we should develop an ACT that is independent of the outcome of the 2010 assessment, in other words, not the top-down method. This would enable the industry to comment on a known set of management alternatives, rather than a estimated range of possibilities that is contingent on the assessment. To that end, the PDT focused on recent fishery performance relative to the catch targets and recommended ACL.

The PDT noted that for the Southern Management Area, the current TAC and associated management measures produced a catch in the most recent fishing year (landings of 7,180 mt plus estimated discards of 29% of landings, or 2,082 mt) of 9,262 mt which is about 70% of the proposed ABC. Looking at the catch/TAC relationship, a 50% increase in the TAC with adjustments to the trip limits and DAS would result in a SMA catch of approximately 13,600 mt, which is roughly equivalent to the ACL, but provides no buffer for management uncertainty. This calculation includes the pattern of TAC overage that has occurred in the SMA in recent years. Using calendar year 2008 catch, being the most recent data available, the current measures resulted in landings of 7,048 mt and a total catch of 9,092 mt, which is about 30% below the current estimate of ABC. A 40% increase in the TAC (which is actually total allowable landings, not catch) would result in landings of 7,140 mt, roughly equivalent to the landings in the most recent period, and when combined with estimated discards, would result in an ACT of 9,211 mt. Since this is approximately equal to the catch that resulted from the current management measures, the PDT would recommend that no adjustment be made to DAS and trip limits under this ACT, in spite of the nominal 40% increase in TAC.

The PDT developed a second alternative for the SMA ACT which would provide a larger buffer between ABC and ACT. Under the current TAC of 5,100 mt plus estimated discards, the total expected catch would be 6,579 mt, which is approximately equal to 50% of ABC, (6,663 mt), providing a greater buffer for management uncertainty. Since current DAS and trip limits have resulted in overages of the TAC, under an ACT of 6,579 mt, there would need to be a recalculation (reduction) in the trip limits and DAS allocated, using data from the most recent fishing year.

In the NMA, fishing year 2007 landings of 5,050 mt were equivalent to the TAC of 5,000 mt. Calendar year 2008 landings were 3,795 mt with an estimated catch of 4,060 mt. Landings in the NMA have been declining over the past several years, even though trip limits, and the associated requirement to use monkfish DAS, were only implemented starting in FY2007. This may be attributed to the effect of multispecies effort restrictions or a declining abundance of monkfish, or both. At this time there is insufficient evidence to conclusively determine the cause of the decline in landings.

The PDT identified two options for the NMA ACT. One is based on the current TAC

plus estimated discards of 375 mt, resulting in an ACT of 5,375 mt. This would result in a buffer of approximately 70% of ABC. The second option is to increase the TAC by 50%, to 7,500 mt. Adding in estimated discards of 563 mt, would result in an ACT of 8,063 mt, which provides a buffer of 54% of ABC, which compares roughly to the 50% buffer in the SMA of the 6,579 mt ACT option.

4) Review SCALE model results for biomass response using various catches during the 2011-2013 period.

   The PDT reviewed four runs of the SCALE model to evaluate the impact of various catch scenarios on the trend in biomass for the period through 2013. Run 1 used observed landings for 2006-2007, and applied the ABC value for 2009-2011 to illustrate the effect of catch at ABC early in the projection time period. Runs 2 and 3 assume status quo catch through 2010 and catch at ABC and ½ ABC for 2011-2013. These runs reflect the fact that current specifications will remain in effect until 2011, when Amendment 5 will take effect. Run 4 uses current catch extended through 2013. The purpose of these runs was to set the bounds on possible ACTs and determine possible impacts on biomass levels. The PDT agreed, however, that because only one input (catch) was variable, and all other parameters were assumed to be constant at 2006 levels, these results have a relatively low level of confidence. Nevertheless, the PDT agreed to present these results to the SSC. The results are shown in Figure 2 and Figure 3.

5) Review and discuss adequacy of discard estimates (CVs, reasons for discards, etc.). Are there updated estimates? Will discard monitoring in 2011-2013 allow for real-time and robust estimates, or do we need to calculate a target landings subset of the ACT to account for estimated discards, and how?

   The PDT considered this to be among the high priority items for discussion because the newly mandated reference points (ACLS, OFL, MSY, etc.) are based on catch, not just landings. As the Council moves toward catch-share management or output controls, the importance of knowing all catch in a timely way increases, since that information becomes relevant not only to the assessment process but to the control of fishing effort and morality on a real-time basis. The PDT agreed, however, that at this time the best discard information is that which was presented at the last assessment in 2007 (terminal year of data was 2006). Given the relative consistency in discard rates in recent years up to that point, and the lack of major changes in regulatory requirements, the PDT felt that applying the 2007 DPWG estimates is justifiable. The base data tables for developing 2008 estimates are not yet available, but are expected to be available before the 2010 assessment. The PDT also agreed that, in spite of the great effort underway to improve overall catch monitoring, it is unlikely that major changes will be in effect during the initial years of Amendment 5, starting in 2011. Therefore, the PDT will use the current estimates from the 2007 assessment as the discard data applicable to the development of the catch targets and limits, and other specifications.

   The PDT strongly recommends development of a robust catch monitoring program for all fisheries, including those with an incidental catch of monkfish. Increasing the precision of the estimates of discards, as well as more precisely identifying the causes

for the discards (e.g., specific regulations, gear configurations, market, etc.) will allow managers to target measures that will reduce discards and will potentially result in increased landings and economic yield from the directed fishery. Improved catch data will also contribute to improving the stock assessment process.

6) Discuss and report to the Committee on the impact of changes in the management system to ITQs or sectors on the estimate of management uncertainty, particularly under the top-down ACT method.

   The PDT only briefly discussed this item, and did not make a formal recommendation. As noted under item 16, however, the PDT is recommending against developing sectors or ITQs in this amendment, in part due to uncertainty, since sectors have not yet been put to the test in this region, in addition to the amendment development timeline concerns.

7) Discuss and report on options for reactive AMs. Would they be targeted to specific fishery subsets (directed, incidental), or would they be applied across all sources of mortality?

   In contrast to proactive AMs (ACTs) which are intended to prevent catch from reaching or exceeding the limit (ACL), reactive AMs would take effect if catch did exceed the ACL. The PDT discussed how reactive AMs might be constructed, and what options might be considered. Knowing what reactive AMs are going to be, will have an implication for the decisions on proactive AMs, since the severity of the reactive AMs will be a consideration in how much of a buffer is desirable to avoid invoking those measures, and what risks the Councils are willing to take in setting the catch targets relative to the limits.

   The guidelines say that "on an annual basis, the Council must determine as soon as possible after the fishing year if an ACL was exceeded. If an ACL was exceeded, AMs must be triggered and implemented as soon as possible to correct the operational issues that caused the ACL overage…". The PDT also noted that paragraph (g)(4) of the guidelines provide for AMs based on multi-year average data for those fisheries which have highly variable annual catches and lack reliable in-season or annual data on which to base AMs. In those cases, the guidelines state that "AMs could be based on comparisons of average catch to average ACL over a three-year period…". The PDT agreed that this section applies to the monkfish fishery, corresponding to the 3-year specification process that is currently in place and what is proposed for Amendment 5, and that further investigation is warranted.

   The PDT noted that in the event of an ACL overage, managers need to distinguish between "blame" and "responsibility". It is not always necessarily the component of the fishery that caused the overage that is held responsible for the remedy. The monkfish FMP provides for incidental catch in other fisheries by assigning various incidental landing limits appropriate to the affected fisheries to minimize bycatch. When developing monkfish management measures for the directed fisheries in the north and south, the FMP first deducts the most recent estimate of incidental landings (not total catch) from the landings target (TAC) to determine the amount of fish

available to the directed fishery. In other words, the FMP controls directed effort, which is based on the TAC residual after incidental catch, but it does not directly control the incidental catch in fisheries managed by other FMPs. The incidental catch takes precedence due to the fact that monkfish is caught to some degree in almost every fishery, and to attempt to control that catch (other than to allow limited landings) would require the FMP to impose management restrictions on fisheries managed under other FMPs.

Extending this management philosophy to the ACL and reactive accountability measures would mean that the ACL would be apportioned, but not allocated based on observed catch distribution (landings plus discards) by various fisheries (directed, by gear, indirect by gear or fishery). When catch exceeds the ACL, the first step in adopting accountability measures would be to determine the source of the overage. If the overage is due to overages by the directed fishery component, then proportional adjustments would be made to the ACT, and associated management measures, for the subsequent year. If the overage is due to catch by incidental fisheries exceeding the expected level, then the amount of the overage would be added to the incidental catch portion of the ACT, with a subsequent recalculation of the directed fishery portion, and associated management measures. This approach would likely apply whether the fishery remained under the current management system, or moved toward a catch-share approach.

The PDT discussed the timing of such adjustments, and observed that the NS1 Guidelines state: "AMs must be triggered as soon as possible." Given the current lag time in data flow, and the time required to do the recalculations of ACT and associated management measures, the adjustment would take place two years after the year in which the overage occurred. In other words, if an overage occurred in FY2007, the adjustment would be in effect for FY2009. This would be an automatic adjustment, but the PDT recommends that the result be published in the Federal Register by January 1 so that the industry has sufficient time to plan for the upcoming year.

8) Provide comment on the Committee's suggestion that we have two different management strategies in the two areas (DAS in one, ITQs or sectors in the other). Review analysis of the catch and effort of vessels fishing in only one area or both.

The PDT reviewed an analysis of 2007 catch by VMS-declaration (which, in the directed monkfish fishery contains area fished) and monkfish limited access permit category. The data illustrates that for many vessels, a substantial portion of their landings (dealer data) occur when the vessel has not declared a directed monkfish DAS (e.g. the vessel has declared a multispecies DAS) or could not be matched to a DAS declaration with dealer-reported permit number and vessel permit number from the DAS system and dealer-reported purchase date and VMS landing date. Based on the data for which area is known, it appears that the majority of vessels landings come exclusively from one area or the other. The data, however, require further analysis to examine the issue of the portion of landings that are not matched to a monkfish DAS declaration. Another source of data from this analysis would be to match dealer-reported landings by vessel to a Fishing Vessel Trip Report (FVTR), which convey area fished. That match would avoid the confounding of unmatched trips with non-

monkfish DAS declared trips seen in the first set of data the PDT examined.

The PDT will provide the Committee the results of its analysis at the May 27th meeting.

9) Review and comment on the impact of minimum fish size increase and mesh size increase proposals. How would these changes affect management measures, catch targets, discards, etc.?

The PDT only briefly discussed these proposals, and made no formal recommendation. Members noted, however, that increasing the minimum size would likely result in increased discards, even if the gear requirements in the directed fishery were adjusted, due to the large proportion of catch that is taken in other fisheries, such as the scallop dredge fishery, , where the gear does not only select for legal sized fish.

10) Review and comment on the proposal for allowing a two-day or three-day running clock using prior notice of landing, either by cell phone or VMS.

The PDT discussed the proposal made during the scoping process to enable gillnet vessels that exceed their daily trip limit to return to port and have the DAS clock account for the overage. Proponents of this concept suggested both a cap of either a three-day limit or a two-day limit, with the latter getting more support. In other words, if the trip limit is 500 lbs., under the current system, a vessel would return to port and be charged a minimum of 15 hours. Under the proposed two-day limit, the vessel could return to port with up to 1,000 lbs. and be charged 24 hours and one minute. Industry proponents argued that this system would greatly reduce discards, improve catch data, promote safety, enable fishermen to be more efficient (reducing fuel and other costs), and reduce the amount of time the gear is in the water over the course of the year (reducing marine mammal interactions).

Regional Office staff briefed the PDT on the administrative and enforcement comments on this proposal. One issue relates to the how the dealer data does not correspond to the landing date, but to the date of the purchase. Additionally, DAS tracking is based on when the vessel returns to port. This creates a potential problem with attributing specific landings events with the DAS clock to adjust the DAS charged based upon the amount of monkfish landed. A second comment is that if this were to be implemented, a vessel must have a VMS, but can report via VMS or call in prior to crossing the VMS line if it intends to exceed the trip limit. The PDT suggested that if only a one-day overage were allowed, the actual amount of fish landed below that amount would not have to be tracked. In other words, all a vessel would be required to do is indicate that it is landing an overage, which would automatically trigger the counting of the extra time (see options discussed below). The actual amount of fish landed would be tracked through the normal VTR and Dealer data. This procedure would only work, however, if only a one-day overage limit were allowed, which the PDT suggests would be adequate to address most of the discard issues with the trip limit restriction while not creating a loophole or an additional landings monitoring burden. If the proposal to reduce the number of allowed gillnets is also adopted (see below #13), then the one-day overage allowance would likely address most of the discard problems that vessels face when fishing 150 nets under a restrictive trip limit.

The PDT suggested three options for how much time would be counted for a one-day overage: 48 hours, 30 hours (since the vessel is charged 15 hours minimum for each trip), or 24 hours and one minute (which is what the vessel would be charged if it steamed around to use up the clock). The PDT did not support the third option, however.

11) Review and comment on the impact of relieving groundfish vessels fishing in groundfish sectors from the requirement to use a groundfish DAS when fishing on a monkfish DAS. How would that provision affect the allocation of monkfish DAS? See item 12 below.

The PDT did not discuss this proposal.

12) Review and comment on the impact of increasing the incidental catch limit on vessels fishing in the NMA from 300 to 500 lbs. per day.

The PDT did not discuss this proposal

13) Review and comment on the proposal to reduce the number of gillnets from 160 (A&B) or 150 (C, D, F &H with a multispecies permit) to 80 or 75 to be consistent with groundfish regulations.

The PDT briefly discussed this proposal in the context of minimizing discards when catches exceed the trip limits, which will also improve overall catch monitoring since a smaller portion of the total catch will attributable to discards. The PDT did not make a recommendation on this proposal.

14) Review and comment on a proposal to allow RSA DAS that are unused, to be carried over to the subsequent year.

The PDT discussed the proposal to allow vessels participating in cooperative research to carryover unused compensation RSA DAS. Fishermen have commented that due to delays in awarding research contracts, often well after the May-June fishing season, and other considerations, they are unable to use their DAS awards before the end of the fishing year. The Regional Office noted that the agency is considering a Regulatory Amendment to address this issue for the 2010 fishing year. One approach being considered is to limit the number of RSA DAS that can be carried over to be consistent with the current rollover provision in the FMP. After some discussion of potential biological impacts, the PDT concluded that since those DAS have already been factored into the DAS allocation procedure, there would be likely be no or minimal biological impact to allowing the carryover. Furthermore, since the current situation dissuades vessels from participating, alleviating the problem would promote cooperative research. The carryover would also promote flexibility and have a positive economic impact for participating vessels. As a result of its discussions, the PDT agreed to recommend two options for consideration: one would allow vessels to carryover unused RSA DAS to the following year (no multi-year accumulation) with no limit on when those DAS could be used; the second option would allow vessels to carryover unused RSA DAS, but would require the vessels to use the DAS within the

first 3 months of the fishing year. This latter option specifically addresses the issue created by the delayed start of the research projects due to contract awards, but does not create an open-ended carryover program.

15) Review and comment on a proposal to allow a C or D permit vessel with a multispecies permit to choose when it will burn its groundfish DAS in conjunction with its monkfish DAS.

The PDT did not discuss this proposal.

16) Review and comment on catch shares proposals (ITQs and sectors). Discuss feasibility of fully developing one or both in Amendment 5, in addition to workload associated with DAS/trip limits specifications and other items listed above.

After reviewing the timeline for Amendment 5, and the DEIS in particular, the PDT members all agreed that it would be unrealistic to consider and develop sectors or ITQs in this action. While many members support such approaches in the long term, they did not see the development of ITQs or sectors as being feasible at this time. In addition to timetable and workload issues, some members also think that now is not the time to implement sectors due to the uncertainty with how effective they will be at controlling overall catch, and, in particular, with how well catch will be monitored. The current management program has been relatively successful at controlling catch levels, and given the uncertainty in the 2007 assessment which found the resource rebuilt and not overfished, some PDT members suggest allowing the uncertainties and implementation problems associated with a completely new management system to be resolved in other fisheries, such as multispecies, where sectors will be implemented in the near future. The PDT recommends that the Council not include ITQs and sectors in Amendment 5.

	Exploitable Biomass (mt)		
	PDT 2009	DPWG 2007	
1980	74,524	86,815	
1981	82,285	95,232	
1982	92,009	105,523	
1983	101,971	115,814	
1984	110,891	124,734	
1985	118,625	132,016	
1986	122,689	134,990	
1987	124,376	135,605	
1988	122,651	133,229	
1989	117,442	127,900	
1990	104,752	115,536	
1991	96,516	108,043	
1992	87,770	98,674	
1993	77,186	88,038	
1994	68,357	80,425	
1995	66,027	79,525	
1996	64,206	67,979	
1997	63,417	67,391	
1998	63,164	67,261	
1999	62,768	66,611	
2000	65,756	69,215	
2001	71,213	74,597	
2002	74,072	77,922	
2003	80,661	85,268	
2004	86,742	86,742	
2005	93,818	93,818	
2006	98,250	98,250	
			difference
average	88,598	96,932	8,334
=Btarget proxy			

Table 1 Comparison of Southern area exploitable biomass estimates from final SCALE runs from DPWG 2007 (3 selectivity blocks) to exploitable biomass derived by applying the most recent selectivity block (2004-2006) to numbers at length output from DPWG 2007 final SCALE run and converting to weight at length.

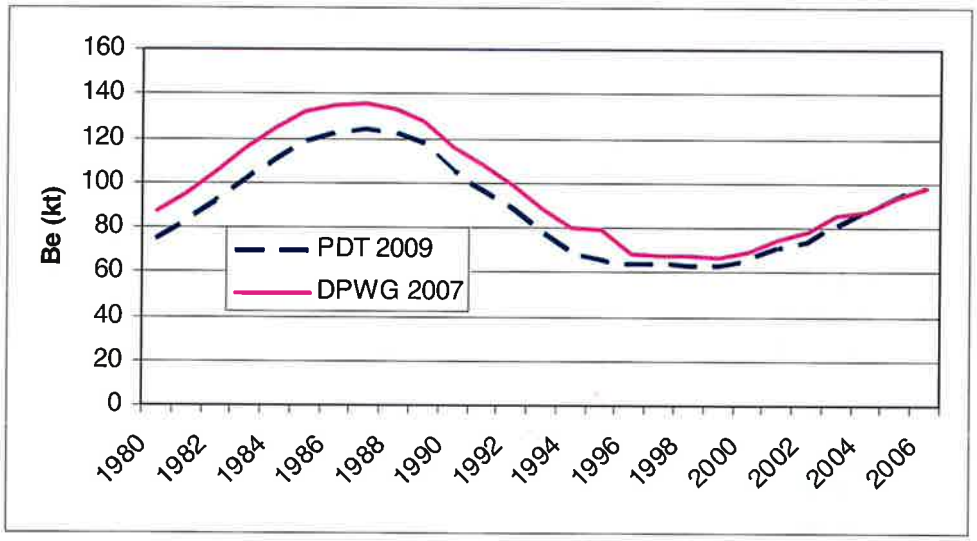


Figure 1 Comparison of Southern area exploitable biomass estimates from final SCALE runs from DPWG 2007 (3 selectivity blocks) to exploitable biomass derived by applying the most recent selectivity block (2004-2006) to numbers at length output from DPWG 2007 final SCALE run and converting to weight at length (PDT 2009).

	$F_{threshold}$	M	exploitable B_{2006} (mt)	exploitable B_{target} (mt)*	$U = F/Z*(1-e^{-Z})$	MSY proxy = $F/Z*(1-e^{-Z})*B$	OFL
North	0.31	0.30	97,940	73,484	0.2321	17,053	22,729
South	0.40	0.30	98,250	88,598	0.2877	25,487	28,263

* calculated as average of exploitable biomass (1980-2006) from SCALE using selectivity curve for 2004-2006 for entire time series

B target was defined by DPWG as average of total biomass (1980-2006)

Table 2 PDT calculations of MSY and OFL based on exploitable biomass targets.

North					South				
Year	Age-1 Recruitment	Exploitable Biomass (kt)	Total Biomass (kt)	F	Year	Age-1 Recruitment	Exploitable Biomass (kt)	Total Biomass (kt)	F
1980	20.50	110.83	127.27	0.05	1980	31.05	86.81	107.91	0.09
1981	14.77	107.23	123.28	0.05	1981	29.96	95.23	116.80	0.06
1982	15.30	104.22	119.68	0.05	1982	24.51	105.52	127.14	0.05
1983	14.84	101.03	115.55	0.05	1983	22.13	115.81	136.88	0.05
1984	13.53	98.12	111.38	0.06	1984	21.65	124.73	144.67	0.04
1985	10.42	94.16	106.18	0.08	1985	20.58	132.02	150.44	0.05
1986	15.11	88.66	99.93	0.07	1986	23.80	134.99	152.10	0.04
1987	14.15	83.50	94.26	0.09	1987	36.12	135.61	152.67	0.04
1988	17.42	76.51	87.14	0.11	1988	14.49	133.23	150.35	0.05
1989	23.66	68.89	80.34	0.15	1989	25.93	127.90	145.58	0.12
1990	27.30	60.25	73.29	0.17	1990	34.10	115.54	133.81	0.10
1991	21.38	53.53	68.36	0.18	1991	39.77	108.04	127.04	0.13
1992	23.33	49.53	66.24	0.22	1992	32.57	98.67	118.80	0.20
1993	36.49	49.15	67.62	0.34	1993	43.95	88.04	110.42	0.26
1994	33.13	46.75	66.12	0.34	1994	35.49	80.43	104.39	0.23
1995	15.48	46.35	66.26	0.41	1995	29.88	79.52	104.05	0.28
1996	20.10	44.93	65.23	0.43	1996	23.35	67.98	101.55	0.35
1997	34.47	45.51	65.33	0.32	1997	24.53	67.39	100.18	0.37
1998	40.99	49.87	69.09	0.20	1998	43.85	67.26	98.37	0.36
1999	52.82	56.78	78.25	0.20	1999	39.26	66.61	96.42	0.29
2000	52.57	61.83	88.35	0.22	2000	34.85	69.21	99.76	0.19
2001	32.21	66.90	97.95	0.30	2001	16.56	74.60	107.38	0.23
2002	26.24	70.35	103.03	0.30	2002	33.33	77.92	112.56	0.19
2003	26.10	77.35	108.33	0.32	2003	50.37	85.27	120.07	0.20
2004	27.85	83.57	110.08	0.23	2004	25.71	86.74	124.26	0.15
2005	22.79	90.33	112.87	0.16	2005	17.44	93.82	129.99	0.15
2006	27.05	97.94	118.70	0.09	2006	30.60	98.25	135.45	0.12
2007	20.50	109.52	129.62	0.06	2007	31.05	104.87	142.74	0.07
2008	20.50	119.88	139.31	0.06	2008	31.05	116.07	151.76	0.07
2009	20.50	125.40	144.02	0.05	2009	31.05	125.14	158.82	0.06

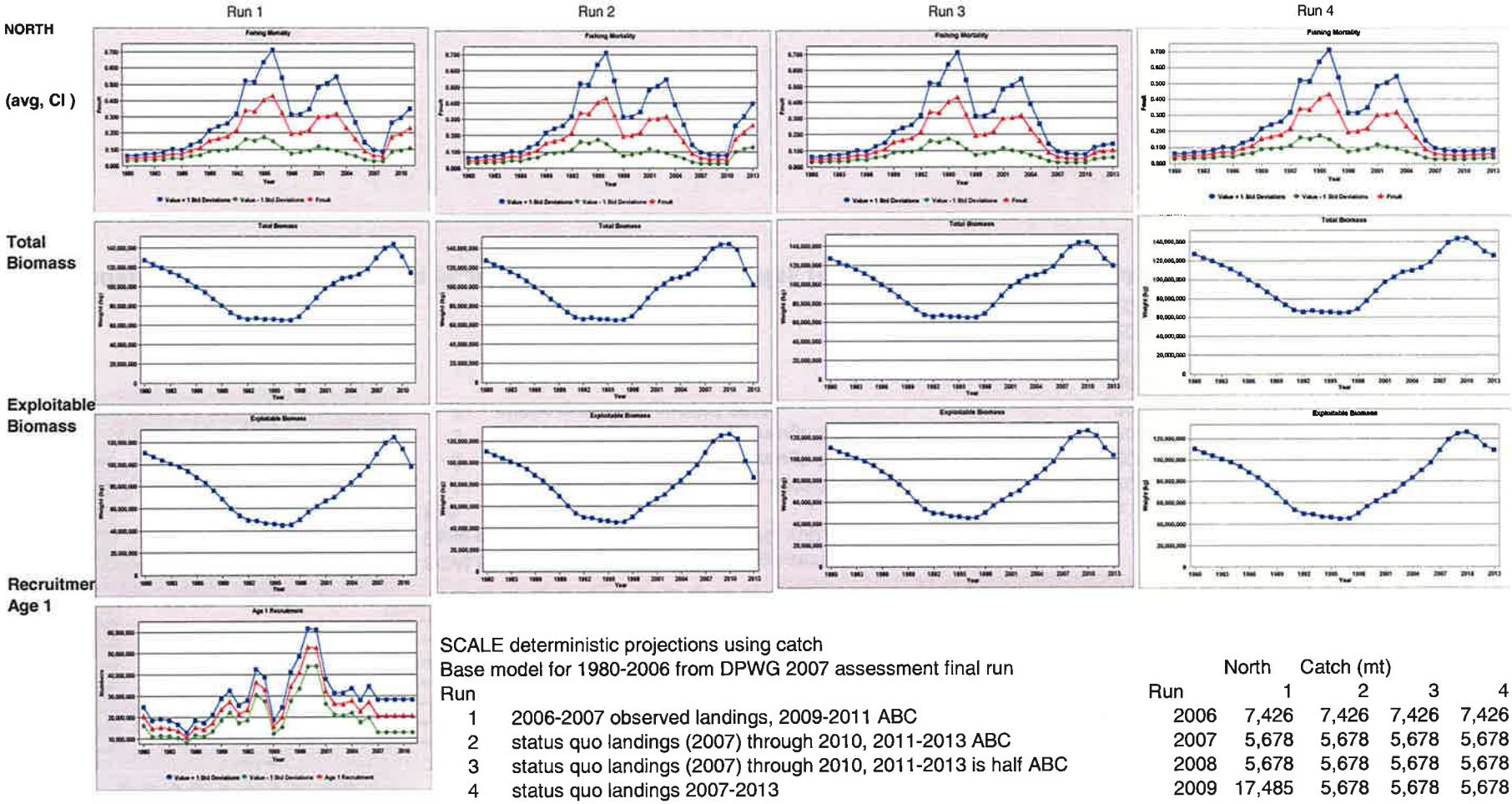
Table 3 DPWG 2007 Estimates of Age-1 recruitment, Exploitable and Total Biomass and Fishing mortality rate from the SCALE model final run, including projections for 2007-2009. Table 1, above, shows the same DPWG results for the SMA exploitable biomass which used three different selectivity patterns reflecting changes over time in the predominant gears used, as well as the PDT's re-calculation of exploitable biomass under the most recent selectivity pattern only for the entire time series.

	Start Year	F_{abc}	U_{abc}	Exp. B_{2006} (kmt)	ABC (mt)	OFL-ABC (mt)	Buffer (OFL-ABC)/OFL
NORTH	1999	0.23	0.18	97.94	17,485	5,234	23%
SOUTH	2000	0.17	0.14	98.25	13,326	14,937	53%

Table 4 PDT Calculation of ABC and the buffers between ABC and OFL

TAC Increase	SFMA	NFMA
20 percent	7,864 mt	6,450 mt
ACL buffer	41 %	63.1 %
50 percent	9,830 mt	8,063 mt
ACL buffer	26.2 %	53.9 %
100 percent	13,107 mt	10,750 mt
ACL buffer	1.6 %	38.5 %
Calculated ABC	**13,326 mt**	**17,480 mt**

Table 5 ACT options using bottom-up approach under incremental increases in current TAC plus estimated discards and associated ACL buffers

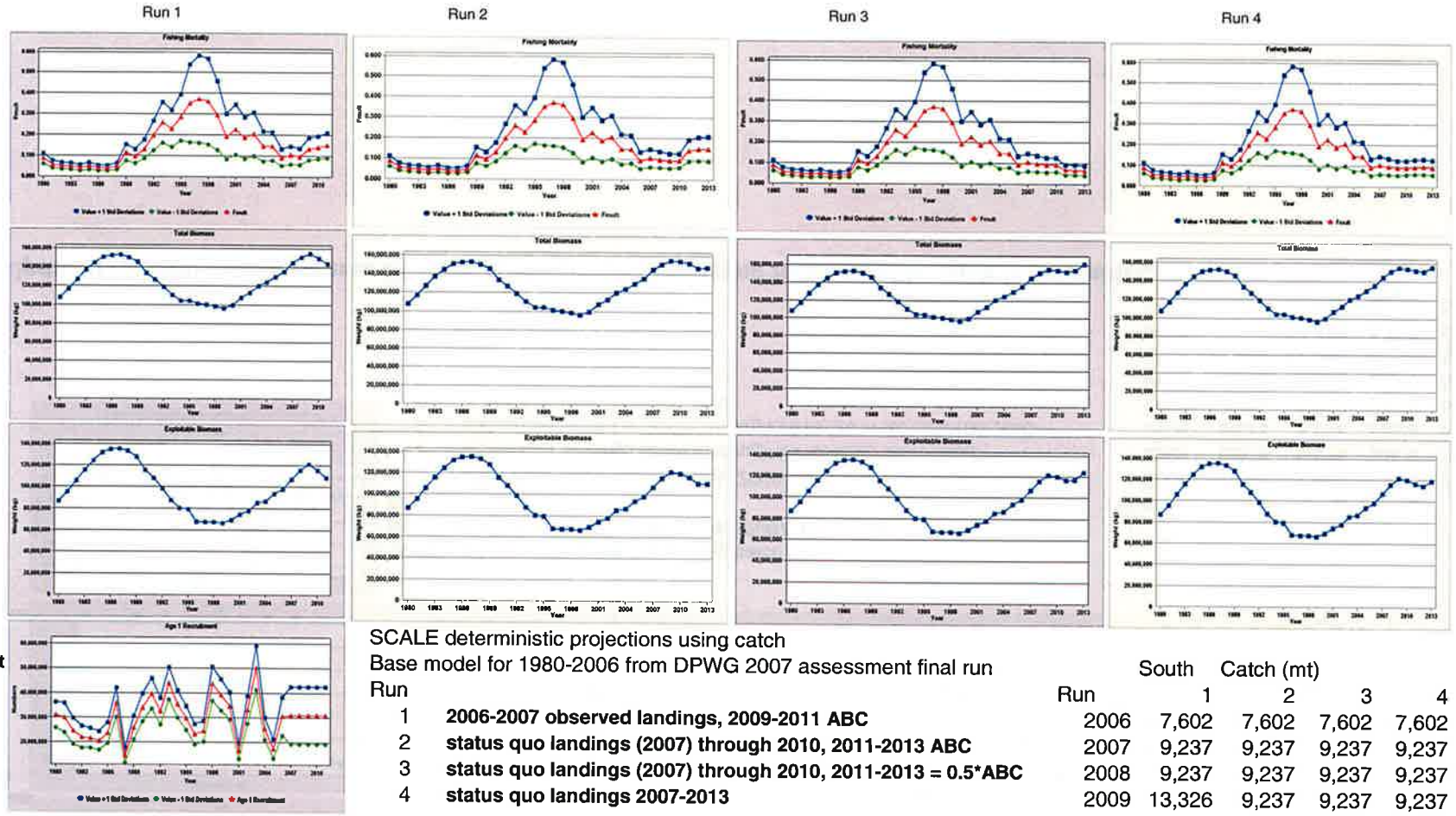


SCALE deterministic projections using catch
Base model for 1980-2006 from DPWG 2007 assessment final run
Run

1 2006-2007 observed landings, 2009-2011 ABC
2 status quo landings (2007) through 2010, 2011-2013 ABC
3 status quo landings (2007) through 2010, 2011-2013 is half ABC
4 status quo landings 2007-2013

	North	Catch (mt)		
Run	1	2	3	4
2006	7,426	7,426	7,426	7,426
2007	5,678	5,678	5,678	5,678
2008	5,678	5,678	5,678	5,678
2009	17,485	5,678	5,678	5,678
2010	17,485	5,678	5,678	5,678
2011	17,485	17,485	8,743	5,678
2012		17,485	8,743	5,678
2013		17,485	8,743	5,678

Figure 2 Updated (5/5/09) Northern area SCALE model projections using four variable catch input values.



SCALE deterministic projections using catch
Base model for 1980-2006 from DPWG 2007 assessment final run

Run

1 **2006-2007 observed landings, 2009-2011 ABC**
2 **status quo landings (2007) through 2010, 2011-2013 ABC**
3 **status quo landings (2007) through 2010, 2011-2013 = 0.5*ABC**
4 **status quo landings 2007-2013**

South Catch (mt)				
Run	1	2	3	4
2006	7,602	7,602	7,602	7,602
2007	9,237	9,237	9,237	9,237
2008	9,237	9,237	9,237	9,237
2009	13,326	9,237	9,237	9,237
2010	13,326	9,237	9,237	9,237
2011	13,326	13,326	6,663	9,237
2012		13,326	6,663	9,237
2013		13,326	6,663	9,237

Figure 3 Updated (5/5/09) Southern area SCALE model projections using four variable catch input values.