

Economic Impacts of the proposed alternatives for Scallop Framework Adjustment 21

There has been some confusion about specific aspects of the economic impacts of the proposed action described in Framework 21 (FW21). The following discussion is intended to clarify how different perspectives and methods used in outside analyses produced different results compared to the analyses in the FW21 document.

While the cost benefit analyses in the FW21 document considered both short and long-term economic impacts of the proposed action, including the impacts on costs, consumer benefits and net economic benefits for the nation, other published reports focused mostly on the short-term impacts for 2010 fishing year relative to the previous fishing year (2009). These short-term economic analyses do not accurately reflect the benefits and costs of the proposed action (F=0.20) or F=0.24 alternative for the following reasons:

- 1) The impacts on revenues were evaluated comparing projected revenues for 2010 to actual revenues from the previous years instead of to the projected revenues for no action. Different methods were applied in estimating the projected reduction in revenue relative to the previous years' levels.
- 2) The impacts on fishing costs were not considered and as a result, the impacts on net revenues and profits were overestimated.
- 3) The impacts of the proposed action and the alternatives on scallop biomass, yield, revenues, consumer surplus, net economic benefits for the nation, regional impacts and impacts on communities beyond 2010 were not considered.
- 4) The impacts of exceeding the fishing mortality targets and removing an additional 8 million pounds of scallops in 2008 with an estimated F of 0.28 and 10 million pounds of scallops pounds in 2009 with an estimated F=0.30 compared to projections of catch and fishing mortality (F) from Framework 19 were not taken into account.

Comparison of projected revenues and costs in 2010 with no action:

The cost benefit analyses for FW21 are based on the comparison of the projected landings and revenues relative to what would happen if the Council took 'no action', not in comparison to landings in the previous year. This is consistent with the NMFS and Office of Management and Budget (OMB) guidelines for cost-benefit analyses and provides a way to separate the impacts of the regulations from the impacts of factors beyond Council's control, such as the changes in scallop biomass, fishing practices, prices and costs.

The no action for the Framework 21 includes 4 access area trips and the same DAS as 2009, resulting in about 50 million pounds of scallop landings and in projected revenues of \$351 million for 2010. The scallop landings are projected to be 42 million pounds and revenues to be \$303 million for the proposed action (F=0.20). Landings under the F=0.24 option are estimated to be 47 million pounds and revenues are estimated to be \$344 for 2010. Therefore, the proposed action would result in a loss of \$47 million compared to the no action alternative and in a loss of \$40 million compared to the F=0.24 alternative.

In order to have a consistent estimate of average revenue per full-time vessel, 3% of set-asides for observer coverage and research set-aside and 5% of the scallop TAC corresponding to the

general category share are deducted from total fleet landings and revenue. The total scallop revenue net of set asides and general category share is divided by 340 full-time equivalent vessels. This resulted in a revenue estimate of \$950,460 for the no action, \$822,236 for the proposed action (F=0.20), and \$931,799 for the F=0.24 alternative. Therefore, the proposed action would lower the revenues for an average full-time vessel by about \$128,000 compared to no action and by about \$109,500 compared to the F=0.24 option in 2010, before cost savings are considered.

The proposed action and the other alternatives considered in FW21 are expected to reduce the trip costs compared with both to the previous fishing year and compared to 'no action' levels, but other studies recently forwarded to the Council do not take these cost savings into account either in the short- or the long-term. Lower open area DAS allocations with the proposed action are estimated to reduce trip costs for the fleet by \$10 million compared to the no action, partly offsetting the reduction in revenue of \$47 million for the proposed action compared to no action. As a result, the revenues per full time vessel net of trip costs are expected to decline by about \$99,000 with the proposed action and by \$5,700 with the F=0.24 option compared to no action scenario.

Importantly, most outside studies on FW21 ignore the long-term impacts of the proposed action and the alternatives. While it is true in the short-term, the proposed action (F=0.20) would reduce total economic benefits for the nation by about \$41 million, the benefits were estimated to increase by \$56 to \$63 million for the five year period from 2011 to 2016. Other studies do not take into account the regional impacts of this increase.

With the F=0.24 option, the economic benefits would decline by only \$5 million in 2010 compared to no action, but are estimated to stay at the same levels from 2011 to 2016 compared to no action. As a result, the proposed action (F=0.20) option would increase net economic benefits to the nation by \$15 to \$22 million over the period 2010 to 2016 while the F=0.24 option would decrease benefits by \$5 million for the same period compared to no action. It should be noted that these estimates do not include future inflation and if the prices were adjusted assuming an increase in price by 2% each year as was done by one outside study (UMASS SMAST), the estimated economic benefits would be higher than these numbers.

In short, the economic impact analyses based on 2010 fishing year only fail to consider the trade-offs between the short-term and long-term benefits. In addition, while these reports emphasized the short-term regional impacts of the decline in landings, no consideration was given to the positive regional impacts with higher landings, revenues and net economic benefits for 2011-2016 and long-term impacts from 2010 to 2023 with the proposed option (F=0.20).

Comparing projected revenues and costs in 2010 with actual revenues in 2008 and 2009

The scallop landings were about 52.5 million pounds in 2008 and are estimated to be about 57 million pounds for the 2009 fishing year. Scallop revenues reached about \$364 million in 2008 and are projected to be about \$367 million for the 2009 fishing year, slightly higher than 2008 levels. This is because the prices declined from about \$6.95 per pound of scallops in 2008 to \$6.45 per pound in 2009 due to higher landings, general economic recession, and lower landings

of large scallops. According to the dealer data about 23% of the scallop landings in 2008 were composed of U10's, but only 15% of the landings in 2009 were U10's. The reduction in the number of large scallops is an important concern for the profitability of the scallop fishery because average prices for U10's were about \$1.75 higher per pound of scallops in 2009. The U10 scallops are in very high demand, especially in the European markets and a further reduction in U10 scallops could lower the average price of scallops and reduce the export revenues the local economies.

Although, comparing the projected levels for 2010 with the actual levels in 2009 is not an accurate way of estimating the economic impacts, the following provides a discussion of the potential changes based on different assumptions about prices and the goal of the comparison. If the goal is to compare the estimated revenues for 2010 with the proposed action to the actual levels in 2009 in order to assess the relative changes in the regional impacts or gross income, a straightforward comparison of the actual revenues (\$367) with the projected revenues for 2010 (\$303) would show that scallop fleet revenues would be about \$64 million lower in 2010 than in 2009. Again, this comparison is not included in Framework 21 analyses because comparing the economic impacts of "before an action" to "after an action" is not what the guidelines suggest, and 2009 conditions are not relevant to the question of which is the best alternative for the future.

The scallop revenue per full-time vessel was estimated to be \$947,842 for 2008 and about \$959,954 for 2009 fishing year after deducting the TAC set-asides and actual share (8% of the total) of the general category fishery in total scallop revenue for these years. As a result, the projected revenue for the proposed action ($F=0.20$) would be about \$137,700 lower, and for the $F=0.24$ option it would be about \$28,100 lower compared to the actual revenues in 2009 per full-time vessel. The decline in revenue compared to the 2008 fishing year would be less than what was estimated in comparison to no action above. It should be noted that the price estimates do not include any inflation and assume that the overall price level will stay at the same level as in 2008. Also, if actual landings and/or prices are higher (lower) than the projected values, the estimated reduction from the 2008 and 2009 levels will be lower (higher).

From the perspective of profits and net crew incomes, it is necessary to take into account the changes in costs as well. Because the proposed action would allocate one less access area trip and less open area DAS compared to 2009, the trip costs for the proposed action ($F=0.20$) would probably be about \$12 million lower than compared with the costs for 2009 fishing year. Deducting these cost savings from the loss, would result in a loss of about \$109,900 for the proposed ($F=0.20$) and \$16,300 for the $F=0.24$ alternative per full-time vessel net of trip costs.

This loss is smaller than the perceived loss by the public (about \$250,000-\$300,000 per vessel) because the prices with the proposed action are projected to be higher, about \$7.30 per pound, whereas the average prices in 2009 fishing year were about \$6.45. The reduction in landings and change in the size composition (more large scallops) of scallops is expected to result in higher prices for the proposed action in 2010 compared to 2009. In contrast, some economic analyses conducted by outside sources, estimate a larger loss not as compared to the revenues from the last couple of years, but compared to what the fishermen would earn if they landed 57 million pounds in 2010 and received higher prices, i.e., \$7 per pound. In addition, the costs savings of the $F=0.20$ option were not taken into account. This scenario will be discussed next.

Short-term impacts: Comparing projected revenues and costs in 2010 with a scenario which continues 2009 open area DAS and access area trip allocations in 2010

The comparisons reported in various economic reports submitted to the Council and in newspaper articles are based on an assumption that if the fleet were allocated 5 trips and the same open area DAS as in 2009, the total landings in 2010 would equal 57 million, but the prices would be higher (\$7+) than they were in 2009 (\$6.45) resulting in larger revenue than earned last year. Therefore, this approach does not show the projected impacts of the proposed action ($F=0.20$) on scallop revenue or income relative to fishing year 2009, but estimates the difference in revenue if fishermen were allocated 57 million pounds instead of 42 million pounds in 2010 and received higher prices for it.

However, FW21 does not include a scenario that projects 57 million pounds of catch. Even under no action, the option with the highest estimate of fishing mortality ($F \approx 0.25$) projected catch is closer to 50 million pounds. To be clear, No Action is not 2009 allocations and associated landings; it is 42 DAS and 4 access area trips. As a result, short and long-term biological projections provided in FW21 do not include a scenario that would project the impacts of catching 57 million pounds in 2010. In the absence of the short and long-term estimates for landings and the size composition of landings, it is not possible to estimate accurately prices, revenues and net economic benefits of such an option. In addition, it should be noted that the even higher fishing mortality associated with catching 57 million pounds in 2010 would most likely reduce long-term yield and economic benefits more than all alternatives considered in FW21 since they project lower catches for 2010. Since no projection of impacts exists for a 2010 catch of 57 million pounds the following paragraphs provide a qualitative discussion.

There is no question that the losses compared to the proposed action ($F=0.20$) would be greater if the scallop fishermen could indeed land 57 million pounds of scallops in 2010 at higher prices than they actually received in 2009. For example, applying a price of \$7 per pound for a scenario with 57 million pounds, as was done in reports completed by outside sources, the total scallop revenue would be \$397 million in 2010, resulting in \$258,000 additional revenue per full-time limited access vessel and net revenue of roughly \$230,000 compared to the proposed action ($F=0.20$). But, the assumed price of \$7 was what was estimated for the no action scenario with 50 million pounds of landings, and depending on the size composition of scallops, the price associated with 57 million (7 million more pounds on the market) would likely be lower than \$7, lowering the perceived losses compared to the proposed action.

An even more important limitation of this approach is not accounting for the impacts of landing an additional 15 million pounds of scallops compared to the proposed action landings (42 million pounds) on the scallop biomass and the yield in 2010. Again, no long-term biological projections exist for this 57 million pound scenario, but the impacts for this scenario on 2011 landings could be roughly estimated as follows: Given that these 15 million pounds of scallops (in meat weight) would grow about 30%, and deducting 10% for natural mortality, results in an extra 18 million pounds of stock biomass in 2011 with the proposed action. Applying a fishing mortality of at least 0.3 to these extra pounds, the loss in landings in 2011 would be about 5 million pounds, amounting to a loss of roughly \$35 million (scallop revenue) for the fleet in 2011 (using again a price of \$7 per pound). This would result in a loss of about \$94,000 per full-

time permit in 2011 alone compared to the proposed action. There would be somewhat smaller, but still significant losses in 2012-2016.

Therefore, short-term analyses completely ignore the impacts of landing 57 million pounds on revenues and on overall economic benefits in 2011 and beyond. They also overlook the impacts on regional revenues, incomes and employment of such scenario in the years following 2010. As a result, focusing on economic impacts only in 2010 or just for a three year period from 2010-2012 (as was done in the Georgetown study submitted to NMFS by the Fisheries Survival Fund) fails to take into account the economic benefits from a risk averse action (i.e., $F=0.20$) compared to a $F=0.24$ option or compared to a option that would allocate 57 million pounds to the fishery in 2010.

This short-term view also contradicts the guidelines specified by NMFS (2007) and in OMB Circular (2003) for the period of economic cost/benefit analyses. These guidelines specify that the period of analysis should include “far enough in the future to encompass all the significant benefits and costs likely to result from the rule” and that, “because fishery management actions in general result in short-term costs for the industry in terms of foregone revenue, choosing a period of analysis that is too short may bias the analysis toward costs, where costs are incurred in the short-term and benefits are realized later.” (NMFS, 2007, section IV.5.c).

The economic impacts of the proposed alternatives compared to the predicted levels in FW19:

As indicated above, the cost-benefit analyses provided in the framework document compare the economic impacts of the proposed alternatives not with ‘before action’ but with the ‘no action’ scenario for 2010 as required by OMB and NFS guidelines.

The public discussion focused mainly on the potential impacts of the proposed action with a ‘before action’ scenario based on the level of landings in 2009 as discussed above. From that perspective, the estimated losses for the proposed action ($F=0.20$) were greater than the losses compared with no action. As a result, the expected losses in 2010 is attributed to the proposed action which allocated lower open area DAS and access area trips compared to what the fishermen were given in 2009.

Lastly, there is another issue that is also overlooked in some of the other economic reports generated from outside sources. The impacts of exceeding the fishing mortality targets ($F=0.20$) and landings envisioned in Framework 19 action cannot be ignored. Actual landings exceeded the estimated landings for Framework 19 by 8 million pounds in 2008 (44.4 million pounds versus 52.5 million pounds) and by 10 million pounds in 2009 (45.9 million pounds versus 57 million pounds). If those additional 18 million pounds of scallops were not harvested in 2008 and 2009, the biomass would have grown 20% to 21.6 million pounds by 2010 after deducting 10% for the natural mortality. If a fishing mortality rate of 0.30 is applied to those pounds, had they been unfished from 2008 and 2009, there would be an additional 6 million pounds of catch available for 2010. The remaining 15.6 million pounds would continue to grow adding to biomass and future yield.

Adding this amount (6 million pounds of additional catch) to 42 million pounds, landings under the proposed action could have been 48 million pounds in 2010, exceeding the previous year's landings projected in FW19 (45.9 million pounds for 2009). As a result, the annual landings and revenue of the scallop fishery would be more stable from year to year and catch would likely continue to increase due to additional biomass available had it not been so heavily fished in 2008 and 2009. Therefore, the estimated losses for the proposed action presented in outside reports overlook the fact that the losses in 2010 are related to fishing mortality being higher than projected in both 2008 and 2009 so overall effort has to be reduced in 2010.

Summary Table: Actual and projected landings, revenues and revenues net of trip costs

Fishing Year	Actual		Projections for 2010		
	2008	2009	No Action	F=0.20	F=0.24
Landings (million pounds)	52.5	57	50	42	47
Ex-vessel Price (\$ per pound, in 2008 prices)	6.94	6.45	7.07	7.31	7.27
Fleet Revenue (million dollars, in 2008 prices)	364	367	351	303	344
Projected Fleet Revenue Compared to No Action (\$ million)				-47	-7
Estimated Revenue per FT vessel ¹	947,842	959,954	950,460	822,236	931,799
Net revenue per vessel ² (revenue minus trip costs)	797,263	836,530	825,938	726,604	820,178
Long-term Projections (discount rate 7%)³					
			No Action	F=0.20	F=0.24
2011-2016 Cumulative Present Value of Fleet Revenue (Million \$)			2,119	2,174	2,116
Difference from No Action				55	-3
2010-2016 Cumulative Present Value of Fleet Revenue (Million \$)			2,469	2,477	2,460
Difference from No Action				8	-9
2010-2023 Cumulative Present Value of Fleet Revenue (Million \$)			4,032	4,112	4,085
Difference from to No Action				80	53

Notes:

1. Revenues per full-time vessel do not include 3% TAC asides. Share of general category fishery in total scallop revenue was removed in estimating the limited access fleet revenue.
2. Due to higher fuel costs, net revenue was lower in 2008 compared to the projected no action revenue in 2010.
3. Using a lower discount rate (3%) increases the cumulative value of the long-term revenues compared to no action.