

8.0 FINAL REGULATORY FLEXIBILITY ANALYSIS (FRFA)

This FRFA is prepared in compliance with the Regulatory Flexibility Act and provides analyses of the economic benefits and costs of the preferred alternatives on small entities. Certain elements required in a FRFA are also required as part of an environmental impact statement. Thus, this section should be considered only part of the FRFA; the rest of the FRFA can be found throughout this document.

8.1 DESCRIPTION OF THE REASONS WHY ACTION IS BEING CONSIDERED

Please see Chapter 1 for a description of the need for and objectives of the final rule.

8.2 A SUMMARY OF THE SIGNIFICANT ISSUES RAISED BY THE PUBLIC COMMENTS IN RESPONSE TO THE INITIAL REGULATORY FLEXIBILITY ANALYSIS, A SUMMARY OF THE ASSESSMENT OF THE AGENCY OF SUCH ISSUES, AND A STATEMENT OF ANY CHANGES MADE IN THE RULE AS A RESULT OF SUCH COMMENTS

NOAA Fisheries received many comments on the proposed rule and the DSEIS during the public comment period. A summary of these comments and the Agency's responses are summarized in Appendix C1 and will be included in the final rule. Some comments were specific to the Initial Regulatory Flexibility Analysis (IRFA), while many comments addressed more general economic impacts associated with the alternatives preferred in the DSEIS.

Specific to the IRFA, one commenter stated that the ex-vessel prices were not up to date. Another commenter stated that increases in target catches were overestimated and losses were underestimated. Commenters also requested that the FRFA consider: (1) increased overhead costs because of the requirement to purchase new hooks and more expensive, non-indigenous baits outside the NED; (2) irretrievable lost costs associated with the measures because existing inventories of fishing hooks would become obsolete; and, (3) the potential for U.S. pelagic longline fishermen to be put at a competitive disadvantage to foreign vessels because of possible increased costs and decreased revenues.

The IRFA utilized 2001 ex-vessel prices that were adjusted to 2002 dollars using the Consumer Price Index on-line adjustment calculator. The FRFA and RIR have been updated using actual 2002 ex-vessel prices. As a result, the annual gross vessel revenue estimate in the final documents (\$178,619) is lower than in the initial analyses due to generally lower ex-vessel prices in 2002.

Estimated changes in target species catches were correctly estimated in the IRFA, as well as the FRFA, using information derived directly from the NED research experiment. The Agency presents a range of economic impacts for many alternatives, because it is not possible to predict fishing behavior and because of the high degree of variability in the impacts of different hook and bait combinations on target species catches. Further, a range of impacts is necessary to reflect the flexibility provided in the final regulations, discussed further below, to choose

between different gear combinations. Analyses in the FSEIS have been refined to include reduction rates for experimental treatments (hook and bait combinations) that have been standardized to control for several variables, including sea surface temperature, daylight soak time, total soak time, vessel effect, and pairing effect in case of matched-paired hook types per set.

With regard to hook costs, initial compliance costs in the FSEIS are estimated to be between \$675.25 - \$1,650.00 for 18/0 hooks, and \$697.50 - \$1,241.75 for 16/0 hooks. After the initial hook purchase, replacement costs for circle hooks are expected to be comparable to, or less than, the replacement costs for “J”-hooks. The DSEIS estimated annual hook costs at approximately \$20,176 per vessel for a year’s supply. However, this estimate has been removed from the FSEIS because not every hook is expected to be lost on every set. There may be some additional costs due to existing inventories of “J”-hooks becoming obsolete. However, a 30-day delay in the effective date of the final measures outside the NED may help vessel owners retrieve some of the costs associated with the prior purchase of “J”-hooks by allowing the hooks to be utilized.

The IRFA/DSEIS/RIR acknowledged that preferred alternatives A3 and A10 could potentially result in adverse economic impacts for small entities depending upon which hook and bait combination was used for particular target species, and that the impacts were generally more severe for mixed target species trips. A large portion of the public comments confirmed these statements and presented three primary reasons for why the alternatives would result in significant adverse economic impacts. First, the alternatives would not provide flexibility to change hook-types and baits in reaction to changing conditions that may occur on longer trips (*i.e.*, species availability and market prices). Second, the requirement to possess and use only 18/0 or larger circle hooks outside the NED would substantially reduce catches of target species in the south Atlantic and GOM regions (*i.e.*, small yellowfin tuna, dolphin and wahoo). Finally, the requirement to possess and use only either whole mackerel or squid baits would be detrimental to vessels fishing in areas outside the NED because Atlantic mackerel is either unavailable, prohibitively expensive, or ineffective at catching target species in the south Atlantic or GOM.

In consideration of these comments, NOAA Fisheries modified the final regulations to allow: (1) the use of 16/0 or larger non-offset circle hooks outside the NED, and (2) the use of both whole mackerel and squid baits inside the NED, and whole finfish and squid outside the NED, regardless of hook type. These modifications mitigate for potential adverse economic impacts, increase flexibility, address geographical differences in the fishery, and ease the compliance burden associated with the purchase and use of non-indigenous bait, while continuing to ensure reductions in sea turtle interactions and mortalities fishery-wide. Because of these modifications, and the fact that the NED research experiment indicated constant, or even increased, catches of target species when using the appropriate hook and bait combinations, domestic pelagic longline vessels are not expected to be at competitive disadvantage relative to foreign vessels.

8.3 DESCRIPTION AND ESTIMATE OF THE NUMBER OF SMALL ENTITIES TO WHICH THE PROPOSED RULE WILL APPLY

The HMS FMP established six different limited access permit types: 1) directed swordfish, 2) incidental swordfish, 3) swordfish handgear, 4) directed shark, 5) incidental shark, and 6) tuna longline. To reduce bycatch concerns in the pelagic longline fishery, these permits were designed so that swordfish directed and incidental permits are valid only if the permit holder also holds both a tuna longline and a shark permit. Similarly, the tuna longline permit is valid only if the permit holder also holds both a swordfish (directed or incidental, not handgear) and a shark permit (directed or incidental). Swordfish handgear and shark permits are valid without another limited access permit. NOAA Fisheries considers all permit holders to be small entities. A description of affected fisheries can be found in Chapter 3 of this document.

The bycatch reduction measures analyzed in this document could potentially affect all vessels currently permitted to participate in the HMS pelagic longline fishery, although only about half of all permit holders are actually active in this fishery. As of November 2003, approximately 235 tuna longline limited access permits had been issued. In addition, approximately 203 directed swordfish limited access permits, 100 incidental swordfish limited access permits, 249 directed shark limited access permits, and 357 incidental shark limited access permits had been issued. Because vessels authorized to fish for swordfish and tunas with pelagic longline gear must possess a tuna longline permit, a swordfish permit (directed or incidental), and a shark permit (directed or incidental), the maximum number of vessels potentially affected by the selected measures is 303 (the number of swordfish permits issued). For additional detail regarding the small entities involved with this fishery, please refer to Chapter 6.

Other sectors of HMS fisheries such as dealers, processors, bait houses, and gear manufacturers, some of which are considered small entities, might be indirectly affected by the preferred alternatives. However, because this action does not apply directly to them, economic impacts on these other sectors are discussed in Chapters 4, 6, and 7, and not here.

8.4 DESCRIPTION OF THE PROJECTED REPORTING, RECORD-KEEPING, AND OTHER COMPLIANCE REQUIREMENTS OF THE PROPOSED RULE, INCLUDING AN ESTIMATE OF THE CLASSES OF SMALL ENTITIES WHICH WILL BE SUBJECT TO THE REQUIREMENTS AND THE TYPE OF PROFESSIONAL SKILLS NECESSARY FOR PREPARATION OF THE REPORT OR RECORD

The preferred alternatives (A5 (b), A10 (b), and A16) will not result in additional reporting or record-keeping requirements but will impose additional compliance requirements (i.e., require possession and use of specific hooks, baits, and release equipment). The alternatives would result in an initial increase in costs but may result in long-term cost savings. Circle hooks required under alternatives A5 (b) and A10 (b) have lower replacement costs than “J”-hooks, and alternative A16 will likely result in increased hook retention. An informal internet and telephone survey of hook suppliers provides a range in price of approximately \$0.28 to \$0.50 (\$0.3539 avg) per hook for 16/0 circle hooks, and \$0.26 to \$0.66 (\$0.4176 avg) per hook for 18/0

commercial grade circle hooks. Large commercial grade “J”-hooks range from approximately \$0.26 to \$1.00 (avg. \$0.5733) per hook. Assuming that an average of 2,500 hooks per vessel are needed to initially comply with hook requirements (equip vessels with enough hooks for one trip), the compliance cost for 16/0 circle hooks, on a per vessel basis, may range from \$697.50 to \$1241.75 with an anticipated average cost of approximately \$884.75. Similarly, assuming that an average of 2,500 18/0 circle hooks per vessel are needed to initially comply with the hook requirements, the compliance cost, on a per vessel basis, may range from \$657.25 to \$1,650.00, with an anticipated average cost of approximately \$1,044.00. The compliance costs for 303 vessels (all permits), 148 (active permits), and individual vessels are detailed in Table 8.1 below. These figures represent the approximate costs to vessels exclusively equipping with the 16/0 and 18/0 circle hook. Actual compliance costs will likely fall somewhere in between these ranges as some vessels may fish with a combination of hook types.

Table 8.1 Initial 16/0 and 18/0 Circle Hook Compliance Costs: 2500 Hooks per Vessel

	Minimum Cost (\$0.2629 per 18/0 hook) (\$0.2790 per 16/0 hook)	Maximum Cost (\$0.66 per 18/0 hook) (\$0.4967 per 16/0 hook)	Average Cost (\$0.4176 per 18/0 hook) (\$0.3539 per 16/0 hook)
1 vessel	18/0 = \$675.25 16/0 = \$697.50	18/0 = \$1,650.00 16/0 = \$1241.75	18/0 = \$1044.00 16/0 = \$884.75
148 vessels	18/0 = \$97,273.00 16/0 = \$103,230.00	18/0 = \$244,200.00 16/0 = \$183,779.00	18/0 = \$154,512.00 16/0 = \$130,943.00
303 vessels	18/0 = \$204,600.75 16/0 = \$211,342.50	18/0 = \$499,950.00 16/0 = \$376,250.25	18/0 = \$316,332.00 16/0 = \$268,079.25

Alternatives A5 (b) and A10 (b) should not increase the needed skill level required for HMS fisheries, as the physical act of switching hook types is a normal aspect of commercial fishing operations. However, there probably will be a period of time during which fishing crews adjust, as with any new gear. Circle hooks are not expected to be prohibitively difficult to work with, as some vessels are already utilizing them. Alternative A16 would require additional skills and would impose a compliance cost for the purchase of required release gear of between \$485.00 and \$1056.50. These costs may be reduced if fishermen are able to construct various pieces of equipment themselves, rather than purchasing pre-assembled gear from a commercial supplier. The equipment specifications and Careful Release Guidelines can be found in Appendix B1 and Appendix B2, respectively.

Traditionally, bait accounts for 16 to 26 percent of the total costs per trip. Any fluctuations in the price and availability of mackerel, whole finfish, or squid baits could have a substantial positive or negative impact on profitability. These baits are generally abundant, but availability will likely depend upon harvesting and distributional capacities. There could also be unquantifiable compliance costs as fishing crews who have not traditionally fished with a particular hook and bait combination familiarize themselves with the most efficient techniques.

8.5 DESCRIPTION OF THE STEPS THE AGENCY HAS TAKEN TO MINIMIZE THE SIGNIFICANT ECONOMIC IMPACT ON SMALL ENTITIES CONSISTENT WITH THE STATED OBJECTIVES OF APPLICABLE STATUTES, INCLUDING A STATEMENT OF THE FACTUAL, POLICY, AND LEGAL REASONS FOR SELECTING THE ALTERNATIVE ADOPTED IN THE FINAL RULE AND THE REASON THAT EACH ONE OF THE OTHER SIGNIFICANT ALTERNATIVES TO THE RULE CONSIDERED BY THE AGENCY WHICH AFFECT SMALL ENTITIES WAS REJECTED

The IRFA for this action described alternatives to the proposed rule which accomplish the stated objectives and which minimize any significant economic impacts. These impacts are discussed below and in Chapters 4 and 6 of this document. Additionally, the Regulatory Flexibility Act (5 U.S.C. § 603 C) (1)-(4)) lists four types of alternatives which should be discussed. These categories of alternatives (all of which assume the proposed action could impact small entities differently than large entities) are:

1. Establishment of differing compliance or reporting requirements or timetables that take into account the resources available to small entities;
2. Clarification, consolidation, or simplification of compliance and reporting requirements under the rule for such small entities;
3. Use of performance rather than design standards; and,
4. Exemptions from coverage of the rule for small entities.

As noted earlier, NOAA Fisheries considers all permit holders to be small entities. In order to meet the objectives of this final rule and relevant statutes (i.e., MSA, ESA, etc.) as well as address the management concerns at hand, NOAA Fisheries cannot exempt small entities or change the reporting requirements for small entities. The preferred hook and bait and sea turtle release gear requirements would not be as effective with different compliance requirements. Thus, at this time, there are no alternatives which fall under the first and fourth categories described above. Alternatives under the second and third categories, which could minimize economic impacts, are discussed below with other alternatives that were considered. Analyses relating to the economic impacts of each specific alternative can be found in Chapters 4 and 6.

8.5.1 Bycatch Reduction Measures

The preferred alternatives (A5 (b), A10 (b) and A16) were designed to reduce sea turtle interaction and mortality levels while minimizing adverse economic impacts to the extent practicable, consistent with the ESA, MSA, and other applicable law. Alternatives A5 (b) and A10 (b) provide the flexibility to select and utilize hooks and baits that are effective at catching both swordfish and tunas, and at reducing sea turtle interaction and mortality. Under preferred alternative A5 (b), fishermen may experience little or no change in catches of tunas, and a 10 to 20 percent decrease in catches of swordfish. Based on this, vessel revenues attributable to tunas would likely remain at approximately \$104,670. Vessel revenues attributable to swordfish may possibly decrease by 3.88 (\$6,925) to 7.75 (\$13,850) percent to between \$171,694 and \$164,769.

However, because fishermen have the option of using a hook and bait combination shown to be effective at catching swordfish, this reduction is not expected to occur. Actual impacts of this alternative would depend on the frequency with which particular hook and bait combinations are employed and species targeted.

NOAA Fisheries expects that approximately 12 vessels will return to the NED under preferred alternative 10 (b), as well as alternatives A7 - A10 (a). Given that no pelagic longline vessels can currently fish in the NED, any revenues generated from fishing in that area under alternatives A7 - A10 (b), will raise gross vessel revenues as compared with the status quo. Under alternative A10 (b), depending on whether fishermen use the 18/0 offset circle hook with whole mackerel bait or the 18/0 non-offset circle hook with squid, respectively, there may be a -32.58 percent to +30.24 percent change in swordfish catches (by weight) and a -87.64 to possibly as much as +29.22 percent (by weight) change in tuna catches. Increases in tuna landings during the NED experiment were substantial but, given limited data were determined to be not statistically significant.

The portion of landings of historically attributable to swordfish may vary by -32.58 percent to +30.24 percent, shifting from 88.54 percent (by weight) of landings to between 59.69 and 115 percent. Gross revenues attributable to swordfish may vary between -28.72 percent (-\$51,292) and +26.65 percent (\$47,608), resulting in overall gross vessel revenues of between \$127,327 and \$226,227. The portion of vessel landings historically attributable to tuna may shift by between -87.64 and +29.22 from 9.85 percent of landings to between 1.22 and 12.73 percent. Gross revenues of vessels attributable to tuna may vary by -9.88 percent (-\$17,642) to +3.29 percent (\$5,882), resulting in overall gross vessel revenues of between \$160,997 and \$184,501. For vessels engaging in mixed target trips, estimated gross vessel revenues could range between \$109,685 and \$232,109. These figures likely represent over estimates of both losses and gains. The actual impact would likely fall between these estimates, depending on the frequency with which particular hook and bait combinations are employed and species targeted.

Preferred alternative A16 (release gear and handling guidelines requirement) would likely have only minor initial adverse economic impacts, as there are currently similar requirements in the pelagic longline fishery, with some positive long-term impacts resulting from reduced hook replacement costs. NOAA Fisheries estimates that a full suite of release gear could cost between \$485.00 and \$1056.50. As stated in Section 8.4, the costs for some of this equipment could be reduced if fishermen were able to construct some pieces themselves, instead of purchasing pre-assembled gear from commercial suppliers. See Chapters 4, 6, and 7 for background, analyses, and additional detail on economic impacts of the preferred alternatives.

Other Alternatives Considered

Alternative A1 (no action) is rejected because it would not provide for any additional sea turtle bycatch and bycatch mortality reduction measures. Further, it would allow the full adverse

economic impacts of the NED closure to be realized given the termination of the NED experiment and its attendant economic benefits.

Alternative A2 (limit vessels with pelagic longline gear onboard, at all times, in all areas open to pelagic longline fishing excluding the NED, to possessing onboard and/or using only 18/0 or larger circle hooks with an offset not to exceed 10 degrees and whole mackerel bait) would likely have significant positive ecological impacts. This alternative would likely increase adverse socio-economic impacts on fishermen, compared to preferred alternative A5 (b), by limiting flexibility in selecting a more efficient hook and bait treatment for use in targeting tuna. As such, those fishermen outside the NED unable to successfully target swordfish would be adversely impacted to a greater extent because of the expected loss in tuna revenues associated with this hook and bait treatment. Further, the commenters also stated that 18/0 circle hooks may be too large to catch some target species encountered outside the NED. Therefore, this alternative is rejected at this time.

Alternative A3 (limit vessels with pelagic gear onboard, in areas open to pelagic longline fishing, excluding the NED, to possessing onboard and/or using only one of the following combinations: i) 18/0 or larger circle hooks with an offset not to exceed 10 degrees and whole mackerel bait; or ii) 18/0 or larger non-offset circle hooks and squid bait) would likely have significant positive ecological impacts. However, during the public comment period commenters stated that alternative A3 does not provide enough flexibility for fishermen to adjust to changing market conditions, change target species while at sea, or employ traditionally used baits. Further, the commenters also stated that 18/0 circle hooks may be too large to catch some target species encountered outside the NED. Alternative A3 is rejected at this time because it would likely result in greater negative socio-economic impacts than preferred alternative A5 (b).

Alternative A4 (limit vessels with pelagic longline gear onboard, at all times, in all areas open to pelagic longline fishing excluding the NED, to possessing onboard and/or using only one of the following combinations: i) 18/0 or larger circle hook with an offset not to exceed 10 degrees and whole mackerel bait; or, ii) 18/0 or larger non-offset circle hooks and squid bait; or, iii) 9/0 “J”-hook with an offset not to exceed 25 degrees and whole mackerel bait) may have either greater or lesser adverse economic impacts than the preferred alternative, depending upon the hook and bait combination chosen and the target species of a specific trip. However, this alternative is rejected because “J” hooks are likely to have a higher post-mortality rate than circle hooks. Interactions with “J”-hooks have a higher incidence of deep hooking and tend to result in more serious injuries for sea turtles.

Alternative A5 (a) (limit vessels with pelagic longline gear onboard, at all times, in all areas open to pelagic longline fishing excluding the NED, to possessing onboard and/or using only 16/0 or larger circle hooks with an offset not to exceed 10 degrees), is rejected because the use of offset 16/0 circle hooks, as opposed to non-offset 16/0 circle hooks, will likely result in higher rates of throat or stomach hooked loggerhead sea turtles and associated mortalities. Alternative A5 (a) would likely have minor to moderate adverse economic impacts on fishermen, given potential decreases in swordfish catch.

Alternative A6 (allow pelagic longline fishing for Atlantic HMS in the NED, maintaining existing restrictions) would have positive social and economic benefits. This alternative would not provide for any additional sea turtle bycatch and bycatch mortality reduction measures or ensure compliance with the ESA, therefore, it is rejected.

Alternative A7 (open the NED to pelagic longline fishing and limit vessels with pelagic longline gear onboard in that area, at all times, to possessing onboard and/or using only 18/0 or larger circle hooks with an offset not to exceed 10 degrees and whole mackerel bait) would be effective at reducing sea turtle interactions, and would have positive social and economic effects as compared to the status quo or historical perspectives. However, it is rejected because allowing only a single hook and bait in the NED would limit the ability of fishermen to target swordfish or tunas more so than alternatives A10 (a) and (b).

While alternative A8 (limit vessels with pelagic longline gear onboard, at all times, in the NED to possessing onboard and/or using only 20/0 or larger circle hooks with an offset not to exceed 10 degrees) would be effective at reducing sea turtle interactions, and would have positive social and economic benefits over the status quo, it would have adverse economic impacts when viewed historically. Please see Chapter 4 for additional details. This alternative is rejected because it would have a greater adverse impact on revenues associated with landings of tuna, and a less positive impact on revenues associated with landings of swordfish compared to preferred alternative A10 (b).

Alternative A9 (limit vessels with pelagic longline gear onboard in the NED, to possessing and/or using no more than one of the following hook and bait combinations: i) 9/0 “J”-hooks with an offset not to exceed 25 degrees and whole mackerel bait; or ii) 18/0 or larger circle hooks with an offset not to exceed 10 degrees and whole mackerel bait) may provide greater positive or negative economic impacts than alternative A10 (b), given the sizable anticipated changes in both swordfish and tuna catches. This alternative is rejected because, as with alternative A4, the use of “J”-hooks is expected to result in higher post-release mortality rates than circle hooks.

Alternative A10 (a) (limit vessels with pelagic longline gear onboard in the NED, to possessing and/or using no more than one of the following hook and bait combinations: i) 18/0 or larger circle hook with an offset not to exceed 10 degrees and whole mackerel bait; or ii) 18/0 or larger non-offset circle hook and squid bait) would be effective at reducing sea turtle interactions and would have positive social and economic impacts over the status quo. However, during the public comment period commenters stated that alternative A10 (a) does not provide enough flexibility for fishermen to adjust to changing market conditions or change target species while at sea. Alternative A10 (a) is rejected because it would likely result in greater negative socio-economic impacts than preferred alternative A10 (b).

Alternative A11 (prohibit the use of pelagic longline gear in Atlantic HMS fisheries) would afford the greatest protection to sea turtles domestically, but is rejected, at this time, because

other bycatch and bycatch mortality reduction alternatives are available and alternative A11 would impose the most significant adverse economic impacts of all the alternatives.

Alternative A12 (close the western GOM year-round) would likely have severe adverse social and economic impacts on a distinct segment of the fishery. Alternative A12 is rejected, at this time, because other bycatch and bycatch mortality reduction alternatives are available. A GOM or alternative closure may be considered in a future rulemaking, as necessary, consistent with the June 1, 2004, BiOp for the fishery. Additional analyses would be necessary to incorporate changes in the environmental baseline resulting from selected circle hook and sea turtle release and disentanglement gear alternatives.

The time/area closures in alternatives A13, A14, and A15 were each analyzed with and without a redistribution of fishing effort. For this reason, the results may indicate increases in target and non-target species catches for certain alternatives.

Alternative A13 (close an area of the central GOM year-round) would likely have substantial economic impacts on a large and distinct segment of the U.S. pelagic longline fleet, communities, buyers, and dealers in the Gulf of Mexico. While data indicate potential increases in catches of swordfish and bigeye tuna of 17 and 32 percent in numbers of fish, respectively, and a decrease of yellowfin tuna catches of two percent in numbers of fish, the actual impacts are unclear as potential changes in weight of landings remain unknown. Loggerhead sea turtle interactions are projected to increase due to relocation of fishing effort under this alternative. While the impacts have not been quantified, NOAA Fisheries anticipates that the overall social and economic impacts of a closure of this size would likely be adverse. Because a high percentage of the historical fishing effort has been located in the area considered for the time/area closure, a substantial number of fishing vessels may need to travel greater distances to reach favorable fishing grounds and spending longer periods at sea, which could potentially increase fuel, bait, ice, and crew costs. In combination with other alternatives, such as hook and bait restrictions, this alternative would have even greater adverse impacts, and more substantial adverse impacts on the GOM segment of the fleet than the preferred alternatives. Alternative A13 is rejected, at this time, because other bycatch and bycatch mortality reduction alternatives are available. A GOM or alternative closure may be considered in a future rulemaking, as necessary, consistent with the June 1, 2004, BiOp for the fishery. Additional analyses would be necessary to incorporate changes in the environmental baseline resulting from selected circle hook and sea turtle release and disentanglement gear alternatives.

Alternative A14 (prohibit the use of pelagic longline gear in HMS Fisheries in areas of the Central GOM and NEC year-round) is rejected, at this time, because other bycatch and bycatch mortality reduction alternatives are available. A GOM or alternative closure may be considered in a future rulemaking, as necessary, consistent with the June 1, 2004, BiOp for the fishery. Additional analyses would be necessary to incorporate changes in the environmental baseline resulting from selected circle hook and sea turtle release and disentanglement gear alternatives. Under alternative A14, swordfish and bigeye tuna catches could potentially increase 18 and 33 percent in numbers of fish, respectively, and catches of yellowfin tuna could potentially decrease

by two percent. The actual impacts are unclear because changes in the weight of landings is not known. Because a high percentage of the historical fishing effort has been located in the area considered for the time/area closure, a substantial number of fishing vessels may need to travel greater distances to reach favorable fishing grounds and spending longer periods at sea, which could potentially increase fuel, bait, ice, and crew costs. In combination with other alternatives, such as hook and bait restrictions, alternative A14 would be expected to have even greater adverse impacts, and more substantial adverse impacts than the preferred alternatives.

Alternative 15 (prohibit the use of pelagic longline gear in HMS Fisheries in areas of the Central GOM and NEC from May through October) is rejected, at this time, because other bycatch and bycatch mortality reduction alternatives are available. A GOM or alternative closure may be considered in a future rulemaking, as necessary, consistent with the June 1, 2004, BiOp for the fishery. Additional analyses would be necessary to incorporate changes in the environmental baseline resulting from selected circle hook and sea turtle release and disentanglement gear alternatives. Under alternative A15, swordfish, yellowfin tuna, and bigeye tuna catches could potentially increase five percent, three percent, and 17 percent in numbers of fish, respectively. The actual impacts are unclear because changes in the weight of landings is not known. Because a high percentage of the historical fishing effort has been located in the area considered for the time/area closure, a substantial number of fishing vessels may need to travel greater distances to reach favorable fishing grounds and spending longer periods at sea, which could potentially increase fuel, bait, ice, and crew costs. In combination with other alternatives, such as hook and bait restrictions, alternative A15 would be expected to have even greater adverse impacts, and more substantial adverse impacts than the preferred alternatives.

References Cited in Chapter 8

NOAA Fisheries. 2003. Evaluating bycatch: a national approach to standardized bycatch monitoring programs. National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Silver Spring, MD. 88 pp.

