

HIGHLY MIGRATORY SPECIES MANAGEMENT TEAM
REPORT ON DRIFT GILLNET HARDCAPS

The Highly Migratory Species Management Team (HMSMT) met with the Highly Migratory Species Advisory Subpanel (HMSAS) during their November 2021 meetings to discuss the range of alternatives (ROA) for Drift Gillnet (DGN) hard caps in the advanced briefing book ([H.3.a, HMSMT Report 1](#)) and additional considerations or recommendations for the Council. These are presented below.

Additional Considerations for Adopting an ROA

The HMSMT has developed a series of schematics to help visualize the descriptions of hard cap alternatives included in the ROA. These are provided in the appendix below, along with accompanying written explanations. In the development and revision of these schematics, several questions arose to which the HMSMT seeks Council clarification.

During discussion of the current action, the HMSMT noticed the terms “year,” “season,” and “fishing year” were often used interchangeably in the Council’s previous hard caps action and subsequent final rule. While the HMSMT views the intent behind these terms as consistent, each term could imply a different temporal scale which could change the nature of the action when applied to hard caps. The HMSMT’s understanding of “year” is that of a calendar year, January 1-December 31. “Fishing year” refers to a 365-day period from April 1-March 31 (50 CFR 660.702). The HMSMT uses “season” to describe the period between May 1-January 31 of the following year when fishing is permitted within some area of the Exclusive Economic Zone (EEZ). The HMSMT believes it is important to be clear about temporal scales for both counting interactions against hard caps and for closure periods resulting from hard caps for all alternatives.

Questions about the temporal scale of the hard caps action led the HMSMT to also question the spatial scale of the action. The final rule to implement the Council’s 2015 hard caps recommendation applied hard cap counts and fishing closures to the EEZ, which is consistent with the spatial extent of the existing EEZ closure to DGN fishing from February through April. However, the HMSMT questioned whether the hard caps and closures should apply beyond the EEZ, i.e., to all vessels in the DGN fleet, regardless of geographic fishing location. Applying hard caps to the EEZ only could allow DGN vessels to fish on the high-seas (currently an infrequent practice) during a hard cap closure, potentially resulting in take of hard cap species that would not count toward hard cap totals.

Lack of clarity on the temporal and spatial application of a hard caps action could inadvertently lead to loopholes in the hard caps action which may allow for fishing outside the EEZ during hard cap closure periods, or result in other unintended consequences. To facilitate addressing such issues, the HMSMT suggests that the Council adopt “fishing year” (April 1-March 31) for all actions pertaining to hard caps, as this is consistent with the regulatory definition, as well as clarify whether hard caps apply only to DGN fishing within the EEZ or include all DGN fishing without regard to area.

The HMSMT also discussed whether reducing the length of the closure period should be matched by a commensurate reduction in cap levels. For example, would a cap of two injuries/mortalities with a window of two years function similarly to a cap of one injury/mortality subject to a window of one year? Due to the rare event nature of bycatch for the species subject to caps, the HMSMT believes reduction from a cap of two events over two fishing years to one over one fishing year could substantially increase the risk of closure and negative economic impacts to the fishery, making hard caps an even more costly action.

The HMSMT discussed a scenario for closures near the end of a fishing season, when the season ends during the closure period. For example, if a cap with a 14-day closure period went into effect on January 31, should the duration of the 14-day closure be considered to end on February 13 (when the fishery is already prohibited in the EEZ), or should the remaining 13 days of the closure be transferred to the May 1-13 period of the same calendar year? The HMSMT recommends the former approach, noting that extending the closure into a portion of the following season when little or no fishing would occur otherwise would create an additional regulatory burden with little or no benefit.

The Council's June [motion](#) states "...individual and all unobservable vessels are prohibited from fishing after the specified cap and the full fleet is closed after the hard cap is exceeded...". The HMSMT was uncertain as to the Council's intent, but interpreted the motion under Alternative 4 to mean that an individual hard cap would trigger a closure when an individual cap is "reached" (a total of 1 turtle) and a fleet hard cap would trigger a closure when a fleet cap is "exceeded" (more than 2 turtles, e.g. 3 turtles; see [Table 3](#)). The HMSMT would like clarification on whether this interpretation of the Council's use of the terms "exceed" and "reach" is correct.

Additional consideration was given to the different potential approaches for narrowing the final ROA to facilitate analysis. Options 1 and 2 under Alternative 3 and options 1 through 3 under Alternative 4 do not take into consideration the rare possibility that an additional interaction could occur, or a second cap be reached during the same season once the fishery reopens from a closure. This seems to contradict the Council's intent to further limit interactions to hard cap levels.

Another consideration is whether the length of the closure period should remain constant or vary over the course of the season. Given that the fishery's most productive period is from November through January, the HMSMT believes that a shorter closure period during this part of the season would maintain the incentives to avoid interactions with hard cap species, while reducing the risk of negative economic impacts to the fishery due to a closure. The HMSMT notes that Alternative 3, Option 5, provides an approach that reduces the closure period towards the end of the season.

The closure options under Alternative 4 were also discussed. Options 1 through 3 are similar, although they represent successively longer closure periods. There is a tradeoff between longer closure periods, which could reduce the risk of interactions, versus shorter periods, which would impose less risk of negative economic impacts to the fishery. The HMSMT could provide an analysis to help the Council decide between this range of suboptions. Since Option 4 would pertain to any of the other suboptions, the Council may wish to decide whether to limit the ROA to include only options 1-3, modified to either include or exclude the provisions of Option 4 going forward. Additionally, the HMSMT suggests that under this alternative if another injury/mortality of ANY hard cap species occurs (not just the species that resulted in the initial closure), the fishery should

close for the remainder of the season. This is different from what is in [H.3.a, HMSMT Report 1](#), which is that another cap for any species would need to be reached for the remainder of the season to be closed to the entire DGN fleet. The HMSMT sees value in comparing Alternative 4 Options 1-3, including provisions of a revised Option 4, in a future analysis.

Potential revised language for Option 4 of Alternative 4 is:

Closure periods as in any one of options 1-3, but 1) when a vessel returns to the fishery during the same fishing season after an individual hard cap closure, should injury/mortality of ANY hard cap species occur on the same vessel, that vessel plus all unobservable vessels are prohibited from fishing for the remainder of the current season, and 2) when the fishery reopens from a fleet-wide hard cap closure during the same fishing season, should injury/mortality of ANY hard cap species occur, the entire fishery closes for the remainder of the current season.

Issues related to Analysis of Alternatives

In preliminary discussions regarding an analysis of an ROA, the HMSMT reviewed relevant changes in the swordfish fishery since the original hard caps proposal was developed that could inform the analysis. Three factors are discussed in further detail below.

1. **DGN fishery participation.** While participation has declined over the long term and to a historic low in the past two years, it has been relatively stable over the past decade. Comparing the five years leading up to the 2015 Council action (2010-2014) to the subsequent five years (2016-2020) leading up to the current action, participation and revenue have not changed significantly. However, the HMSMT discussed how this information may not capture the impacts of other factors, such as state regulations, development of deep-set buoy gear (DSBG), fishermen's participation in the management process, COVID, etc. Further, the HMSMT questioned the potential impact of the proposed Federal legislation (i.e., [S.273](#)) should it become law, possibly as soon as the turn of the year.
2. **Authorization of a DSBG fishery.** In light of the Council recommendation for DSBG authorization as a “reasonably foreseeable” future action, which may provide an additional source of revenue that could potentially offset financial losses during hard cap closure periods if DGN participants are able to effectively use DSBG. However, it is unknown whether DSBG may produce a comparable net revenue stream for DGN vessels (both overall and on a per-vessel basis). The HMSMT discussed some differences in the markets served by DSBG and DGN products, as well as the timing of respective fishing seasons. While the Council did not recommend closure periods for DSBG fishing, ocean conditions during the winter months of the DGN season may limit or prohibit DSBG fishing. This is reflected in the ex-vessel revenue of the two fisheries over the year. Figure 1 below shows average monthly inflation-adjusted ex-vessel revenue on a per-vessel basis over the 2011-2020 time period. It can be seen that DSBG ex-vessel revenue peaks from August through October, while DGN revenue peaks from November to January.

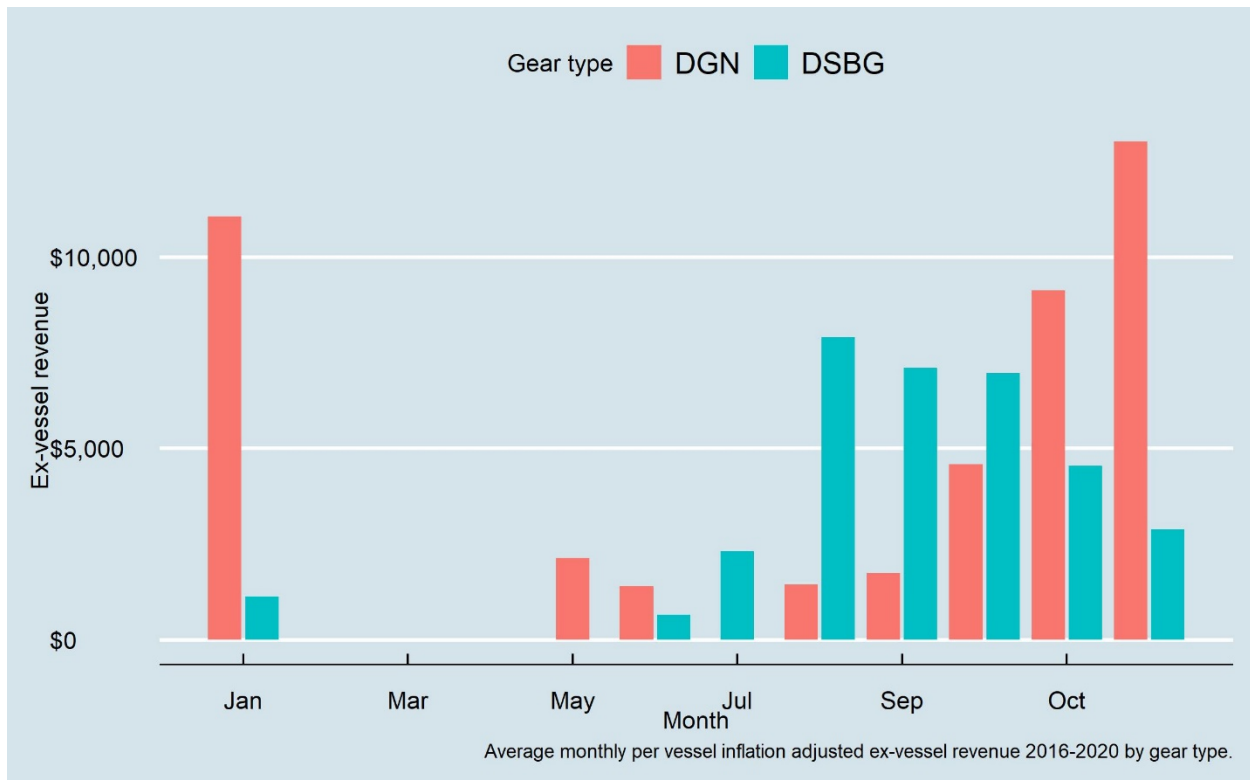


Figure 1. Average monthly inflation-adjusted ex-vessel revenue per vessel, 2016-2020, for DGN and DSBG landings.

3. **The availability of dynamic ocean modeling tools.** The HMSMT discussed the potential relationship between length of closure periods and the strength of incentives to avoid interactions with hard cap species. A key assumption in relating the two is that DGN participants have access to information about how to avoid these species. The newly available [EcoCast product](#) may help. It provides near real-time spatial information on bycatch risk. Fishers could use this information to decide when and where it would be best to fish and avoid bycatch. However, of the hard cap species proposed, Ecocast modeling currently only includes leatherback sea turtles, so its utility may be limited with regards to the other species subject to hard caps.

Timing of an Analysis of the Alternatives

Council adoption of an ROA at this meeting and clarifications on the proposed action as raised in this report will assist the HMSMT in better gauging the necessary workload to prepare an analysis for Council consideration at a future meeting. Given the need for clarification on a number of germane elements, the HMSMT was unable to determine the appropriate methods for producing an analysis at this meeting. The HMSMT believes it could make some headway on producing an analysis between now and the March 2022 meeting. However, at this time, we are unable to guarantee completion of an analysis by March. To support a Council discussion of this agenda item in March, we anticipate the need for additional HMSMT meetings well in advance of the March meeting to determine methods and effectively delegate analytical workload.

HMSMT Recommendations to the Council

- 1) Adopt a final ROA, and:
 - a) Clarify whether an individual vessel should cease fishing when an individual cap is reached, or when it is exceeded,
 - b) Clarify whether the entire fleet would cease fishing when the fleet cap is met or when it is exceeded,
 - c) Standardize terminology when referring to the hard cap time frame, preferably “fishing year” (April 1 - March 31) to remain consistent with regulatory language,
 - d) Clarify whether hard caps apply only to fishing within the EEZ, or to the entire DGN fleet regardless of geographic fishing location,
 - e) Narrow the range of options included under Alternative 3 to only Option 5,
 - f) Include Alternative 4 Options 1-3, including the provisions of Option 4 in the final ROA, and modify Alternative 4 Option 4, so that if another injury/mortality of ANY hard cap species occurs after the fishery reopens (i.e., not just the species that resulted in the initial closure), the fishery would close for the remainder of the season to ensure another cap is not reached.

- 2) Task the HMSMT with conducting an analysis of the range of alternatives to support Council consideration before selecting a preliminary preferred alternative (PPA).

- 3) Identify reasonably foreseeable future actions (e.g., DSBG authorization, fishery transition program, etc.) that the Council expects the HMSMT to consider in its analysis to inform Council selection of a PPA.

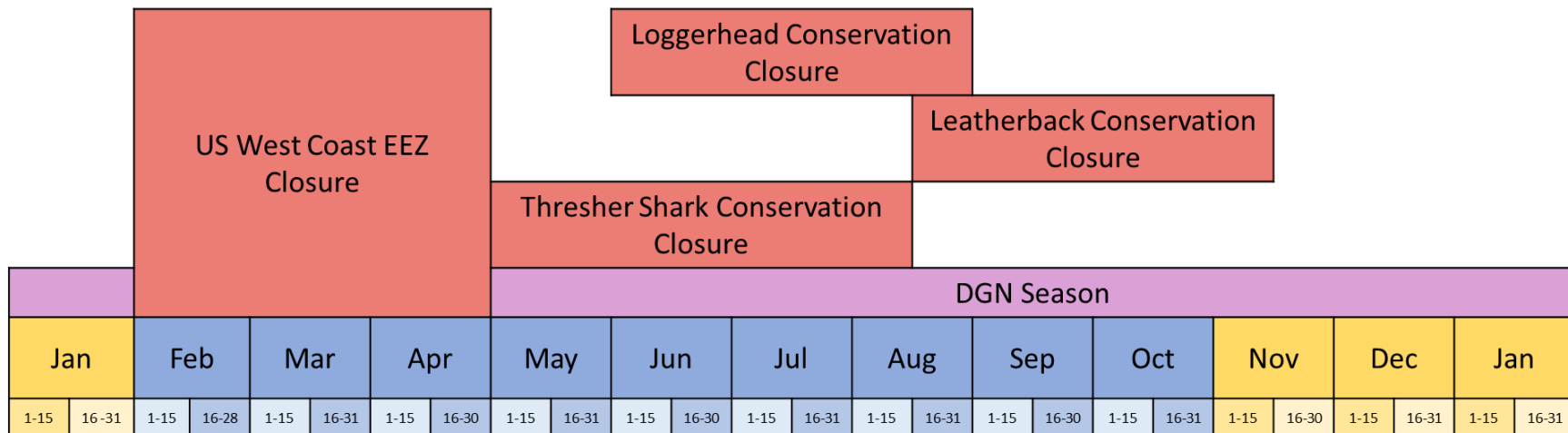
- 4) Consider HMSMT concerns for scheduling work to develop an analysis of the alternatives.

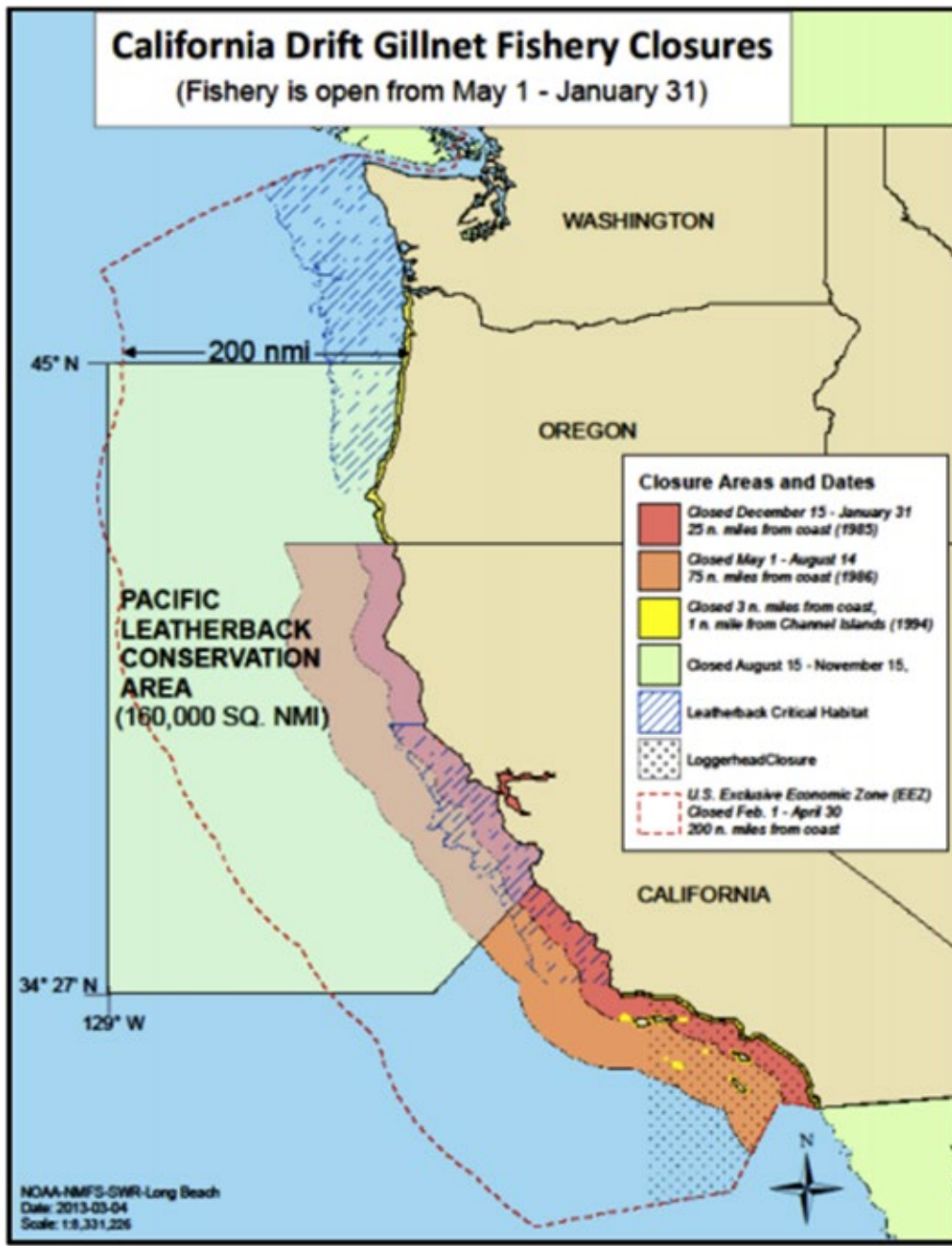
PFMC
11/18/21

Appendix: DGN Hard Cap Schematics

This schematic is used as a base for all of the proposed alternatives to allow for consideration of cumulative effects of closure periods. This schematic depicts the largest time and area closures for the DGN fishery. These include:

- 1) The US West Coast EEZ Closure which closes inside the entire U.S. West Coast EEZ from February 1 to April 30.
- 2) The Thresher Shark Conservation Closure shows that DGN fishery is closed within 75 miles of the California mainland from May 1 through August 14 to conserve common thresher shark.
- 3) The Loggerhead conservation closure restricts DGN from June 1 – August 31 during a NOAA declared El Nino year, and is located south of Point Conception, CA and east of 120° W longitude.
- 4) The Pacific Leatherback Conservation Closure restricts DGN north of Point Conception, CA (34°27' N latitude) to mid-Oregon (45° N latitude) and west to 129° W longitude annually within this conservation area from August 15 to November 15. The DGN season (May 1- January 31) is denoted with months of high catch/revenue highlighted in yellow.







California-Oregon-Washington large mesh drift gillnet closures. Source: NMFS WCR.

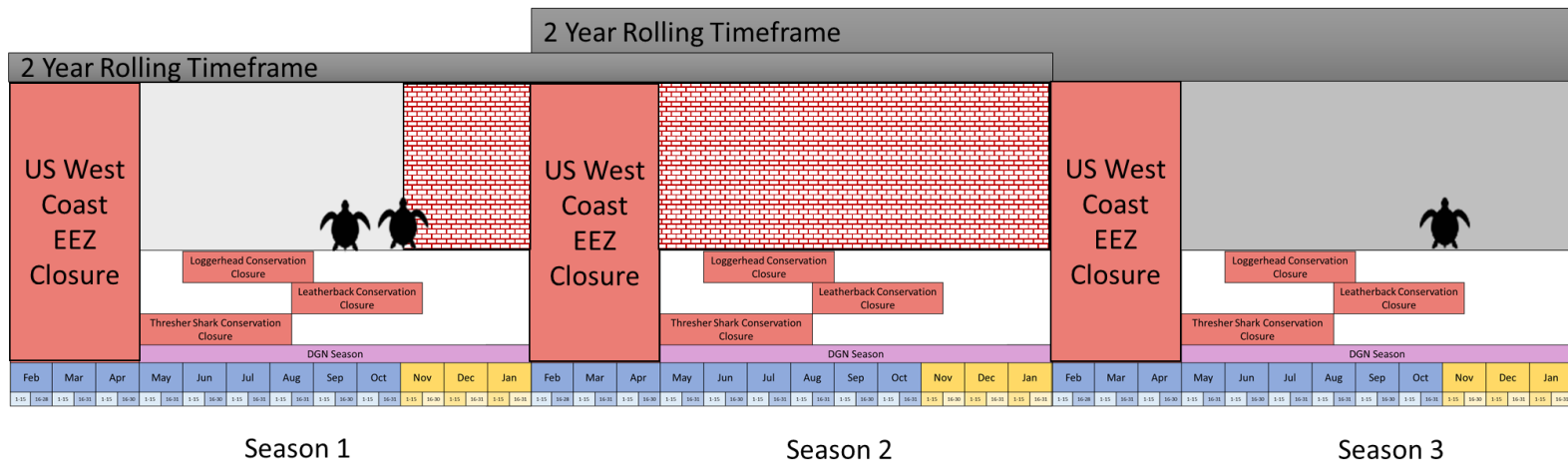
Alternative 2: 2 Year Rolling CAP (2015) (HMSMT Report 1) Example 1

In this example, the hard cap closure would again go into effect once the second turtle mortality/injury was observed and would last for the remainder of the rolling 2-year timeframe. Given the timing of these observed mortalities/injuries, the later part of season 1 (when revenues are high) would be closed as would all of season 2. This closure would overlap with the US West Coast EEZ Closure. The fishery would then reopen in season 3, which could allow an additional observed mortality/injury of a turtle without triggering a closure of the fishery since the rolling 2-year timeframe would only include the one interaction.

Turtle Hard Cap: 2

Mortality/Injury 


Hard Cap Closure 




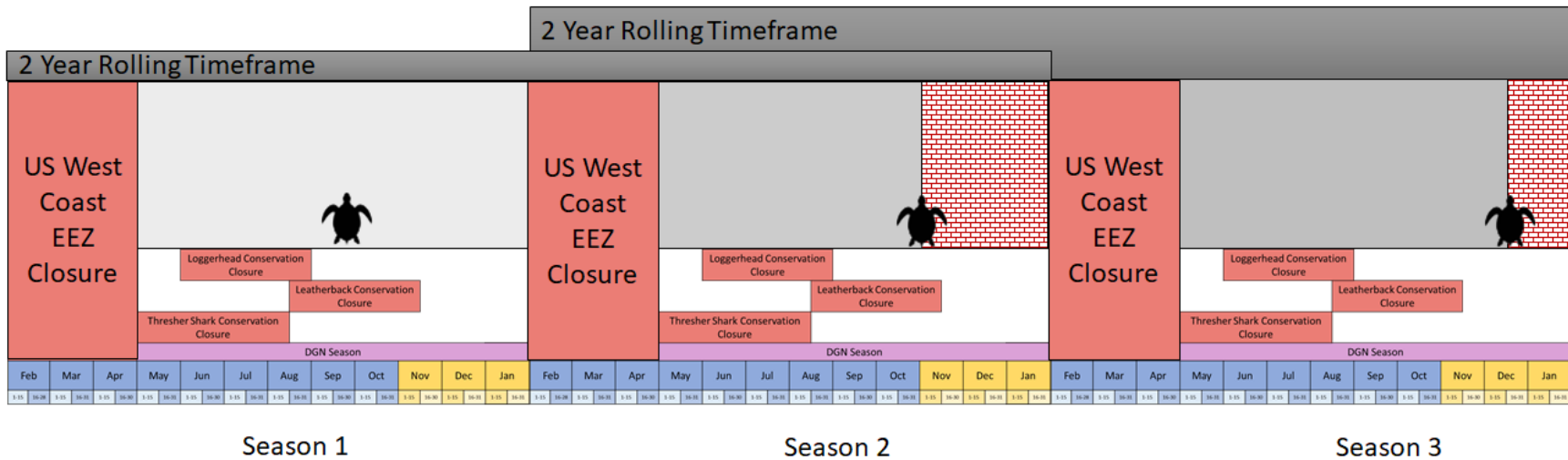
Alternative 2: 2 Year Rolling CAP (2015) (HMSMT Report 1) Example 2

In this example, the hard cap would again go into effect once the second turtle mortality/injury was observed and would last for the remainder of the rolling 2-year timeframe. Given the timing of these observed mortalities/injuries, the later part of season 2 and 3 (when revenues are high) would be closed. This closure would overlap with the US West Coast EEZ Closure. The fishery would then reopen in season 4.

Turtle Hard Cap: 2

Mortality/Injury 

Hard Cap Closure 




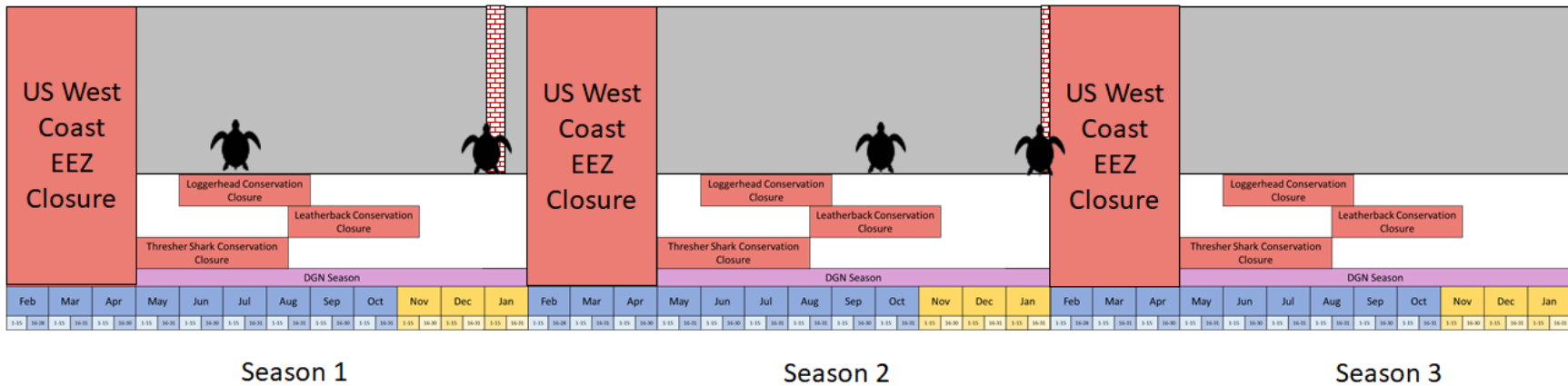
Alternative 3: Annual Fleet-wide Hard Caps Option 1: [14-day closure] (HMSMT Report 1)

For this option, two observed mortalities/injuries trigger a fleet-wide closure through the 14th day or January 31, whichever is earlier. For the second mortality/injury observed in this example, the closure occurs on January 1, so the fishery then reopens on the 15th day. However, as seen in the example in season 2, the second mortality/injury is observed after January 17th, so the hard cap closure would overlap with the US West Coast EEZ Closure and reopen May 1.

Turtle Hard Cap: 2

Mortality/Injury 

Hard Cap Closure 




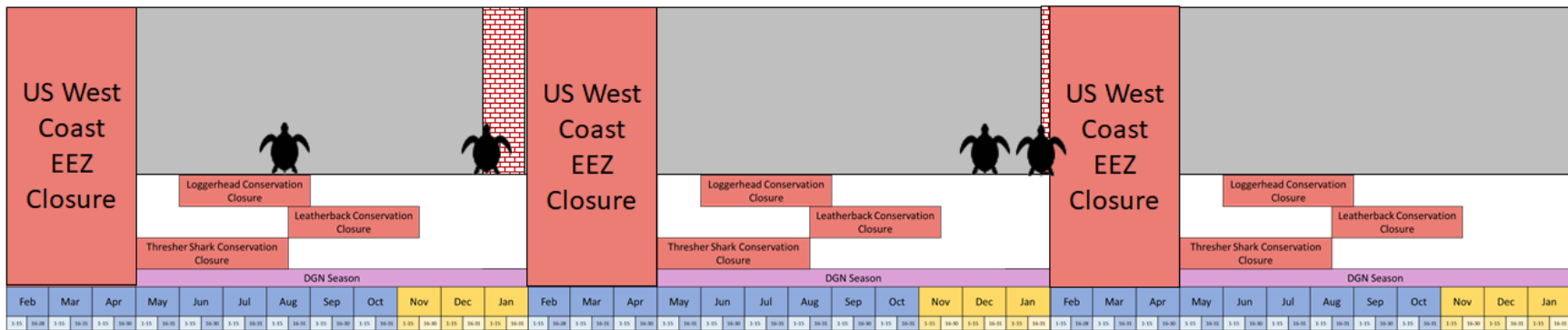
Alternative 3: Annual Fleet-wide Hard Caps Option 2: [30-day closure] (HMSMT Report 1)

For this option, two observed mortalities/injuries trigger a closure through the 30th day or January 31, whichever is earlier. The second mortality/injury observed in this example occurs on January 1, so the fishery then reopens on January 31 depicted below in season 1. In season 2, the second mortality/injury is observed after January 17th the fishery would overlap with the US West Coast EEZ Closure and reopen May 1.

Turtle Hard Cap: 2

Mortality/Injury 

Hard Cap Closure 



Season 1

Season 2


Season 3

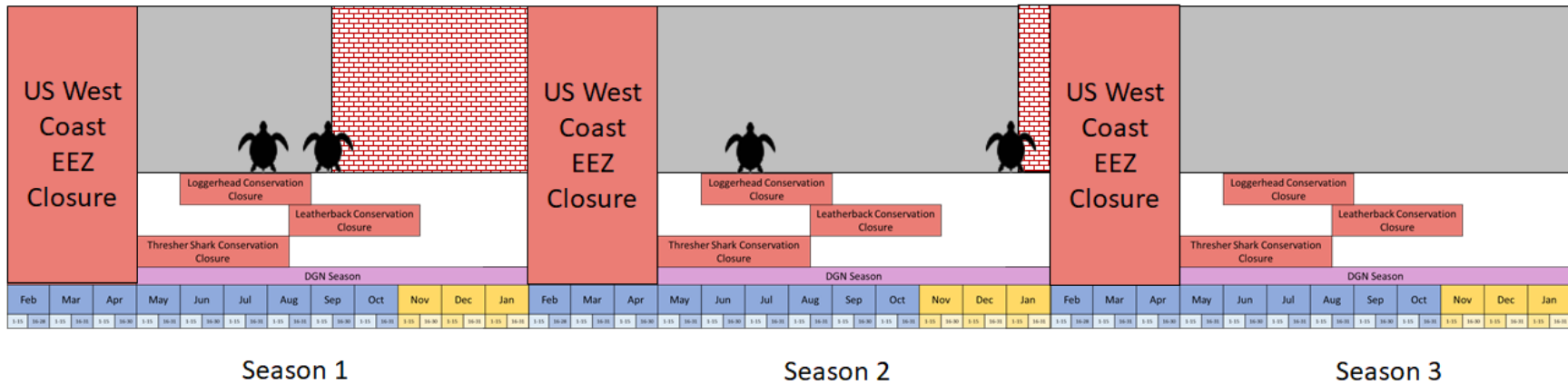
Alternative 3: Annual Fleet-wide Hard Caps Option 3: [Remainder of the Season] (*HMSMT Report 1*)

For this option, two observed mortalities/injuries trigger a closure through January 31. The fishery then reopens on May 1 or the beginning of the next season. This example shows two different lengths and impacts of closures based on when an observed mortality or injury occurs during the season.

Turtle Hard Cap: 2

Mortality/Injury 

Hard Cap Closure 




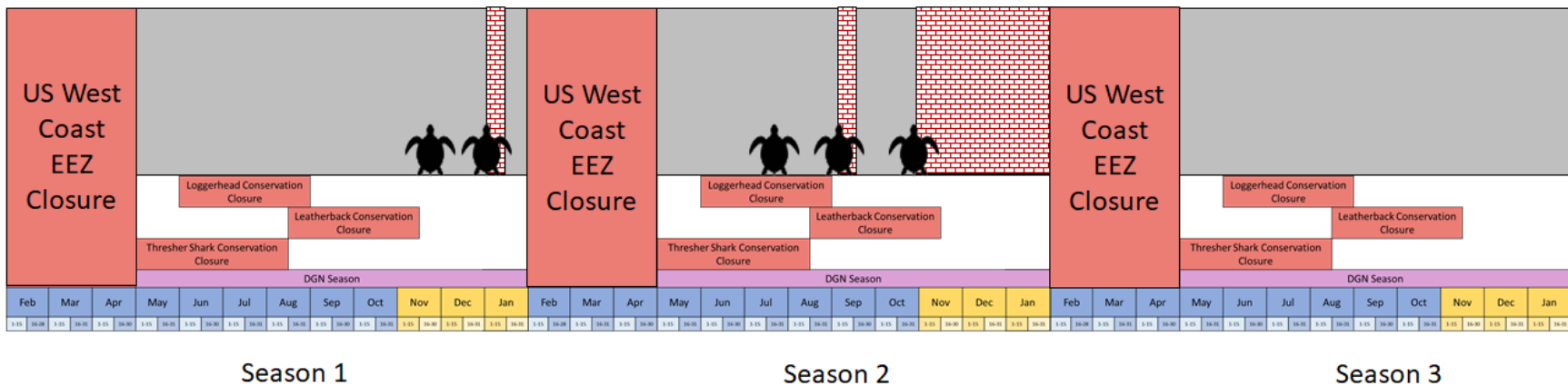
Alternative 3: Annual Fleet-wide Hard Caps Option 4: [14-day, and Remainder of the Season] (HMSMT Report 1)

For this option, two observed mortalities/injuries trigger the fishery to close for 14 days. The fishery then reopens, either on the 15th day, if the closure begins on or before January 17 (as is shown in season 1), or May 1, if the closure begins on or after January 18. If a third mortality/injury (as shown in season 2) with any hard cap species occurs within the same season after reopening, the fishery closes through January 31 before reopening on May 1 (shown in season 3).

Turtle Hard Cap: 2

Mortality/Injury 

Hard Cap Closure 




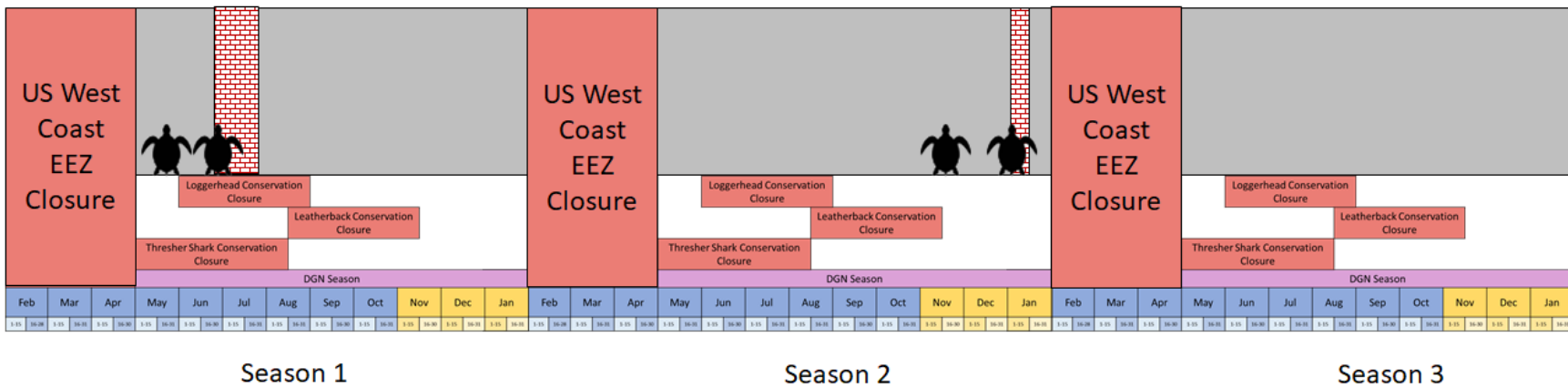
Alternative 3: Annual Fleet-wide Hard Caps Option 5: [30-day in early season, 14-day in late season] (HMSMT Report 1)

For this option, if an observed mortality/injury occurs in the early part of the season (May through October) a 30-day closure is enacted (see season 1). If a cap is reached during the late season (November to January), a 14-day closure is enacted as is shown below in season 2.

Turtle Hard Cap: 2

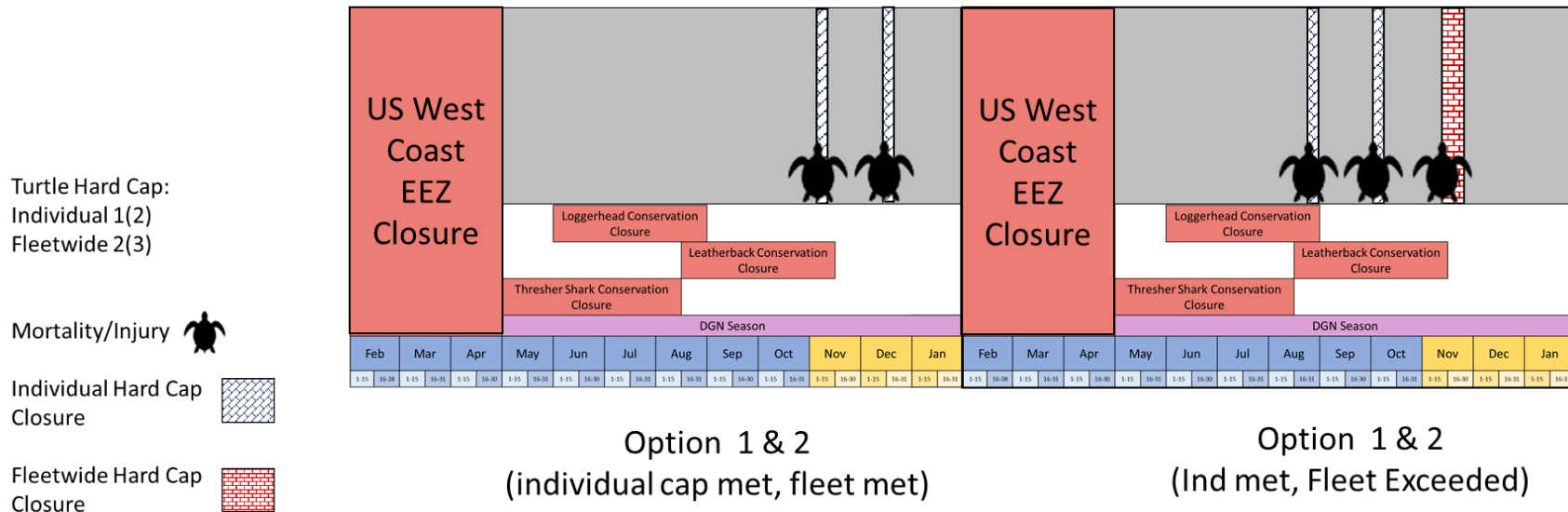
Mortality/Injury 

Hard Cap Closure 



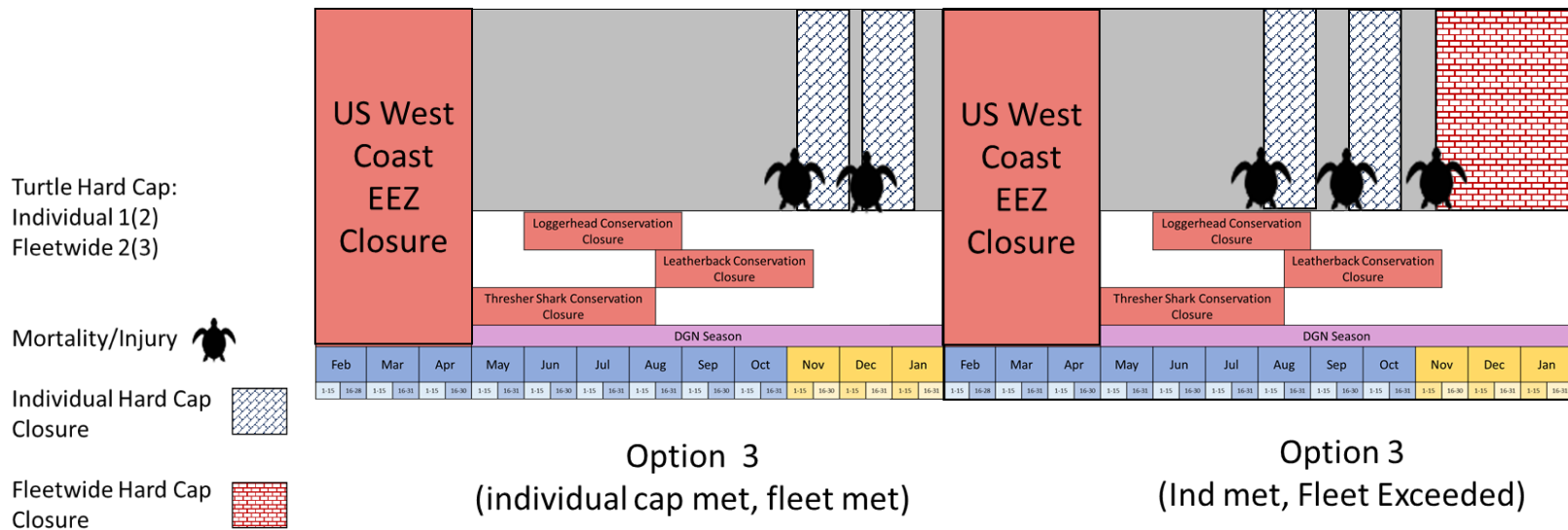
Alternative 4: Individual Vessel and Fleet-wide Hard Caps (*HMSMT* Report 1) Options 1 & 2: Individual closure period 7 days or 14 days, Fleet-wide closure period 14 days or 30 days

Under this alternative, hard caps apply both to individual vessels and the fleet as a whole based on the numbers shown in Table 3. For this example, we are using the turtle hard caps listed below. When an individual vessel reaches or exceeds an individual cap, both that vessel and all unobservable vessels would have to stop fishing. All vessels in the fishery would have to stop fishing when a fleet-wide cap is exceeded. The example below on the left shows options 1&2 of this alternative where the individual cap is met with the first interaction and exceeded with the second. The fleet cap is met, but not exceeded. This scenario would result in two individual closure periods for either a 7-day closure (Option 1) or 14 day closure (Option 2) for individual vessels and unobserved vessels, but no closure for the fleet. In the example shown on the right, both the individual and fleet caps are exceeded. Therefore, in addition to the individual closures as in the previous example, there would also be a fleet-wide closure for 14 days (Option 1) or 30 days (Option 2).



Alternative 4: Individual Vessel and Fleet-wide Hard Caps (*HMSMT* Report 1) Option 3: Individual closure period 30 days, Fleet-wide closure period remainder of the season

Similar to the above example, this option includes individual and fleet-wide closures. The example below on the left shows Option 3 of this alternative where the individual cap is met with the first interaction and exceeded with the second. The fleet cap is met, but not exceeded. This scenario results in 30-day closure periods for individual vessels and unobserved vessels, but no closure for the fleet. In the example shown on the right both the individual and fleet caps are exceeded. Therefore, in addition to individual closures in the previous example there would also be a fleet-wide closure for the remainder of the season. The fishery would reopen on May 1.

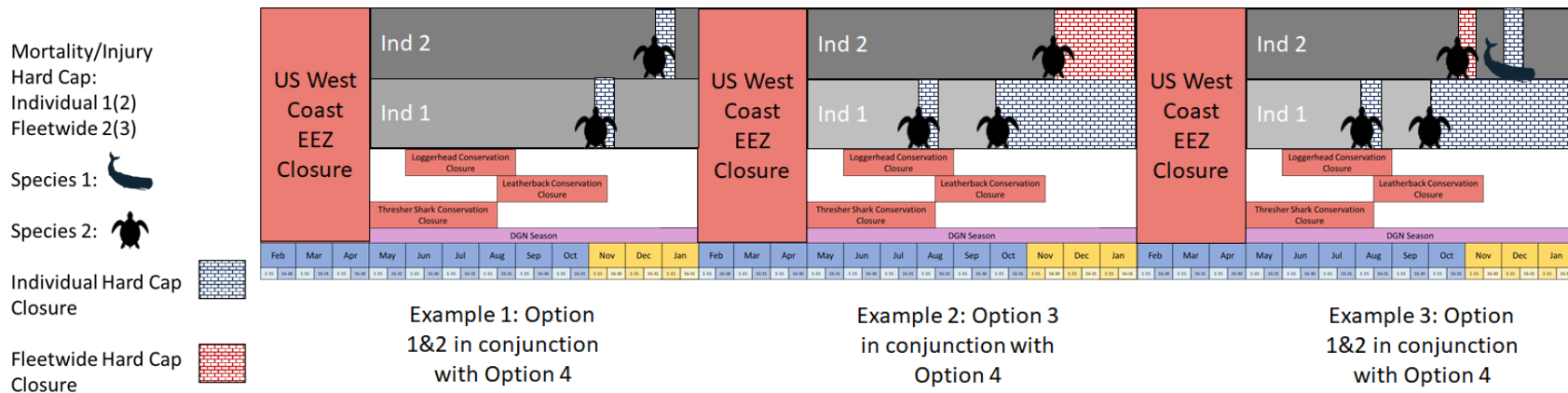


Alternative 4: Individual Vessel and Fleet-wide Hard Caps (HMSMT Report 1) Option 4:

Closure periods vary with the above options, and

1) when the fishery reopens during the same fishing season, should a vessel that previously reached/exceeded an individual vessel cap again hit any of the caps, that vessel plus all unobservable vessels are prohibited from fishing for the remainder of the current season,

and 2) when the fishery reopens during the same fishing season, should any of the fleet-wide caps be reached, the entire fishery closes for the remainder of the current season.



Alternative 4: Individual Vessel and Fleet-wide Hard Caps (*HMSMT* Report 1) Option 4 (Revised):

The schematic below depicts the potential revised language for Option 4 of Alternative 4:

Closure periods as in any one of options 1-3, but 1) when a vessel returns to the fishery during the same fishing season after an individual hard cap closure, should injury/mortality of ANY hard cap species occur on the same vessel, that vessel plus all unobservable vessels are prohibited from fishing for the remainder of the current season, and 2) when the fishery reopens from a fleet-wide hard cap closure during the same fishing season, should injury/mortality of ANY hard cap species occur, the entire fishery closes for the remainder of the current season.

