Upper-slope Dogfish Management Strategy (the Strategy) review - summary table of elements/questions that are being considered as part of the review including industry proposals, scientific advice and the Australian Fisheries Management Authority’s (AFMA) draft position in relation to each element.

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| Element | Justification | Scientific Advice (2019-20) | Proposed AFMA position |
| 1. Is the rebuilding timeframe of three mean generation times still appropriate?

*The Commonwealth Fisheries Harvest Strategy Policy (HSP) and Guidelines (2007) defined typical rebuilding timeframes as the minimum of 1) the mean generation time plus ten years, or 2) three times the mean generation time, noting that the mean generation time is defined as the average age of a reproductively mature animal in an unexploited population. This approach remains consistent with the rebuilding timeframes described in the revised HSP Guidelines, 2nd edition, 2018.* | Based on the HSP the recovery times for Harrisson’s dogfish would be 38.5 years and for southern dogfish 30.5 years. The Scientific Working Group (SWG) that was established to inform the development of the Strategy did not support the use of this standard calculation of recovery time for either species for the following reasons:a. The calculation of the recovery time is based on teleost species for which recruitment processes are different than for slow reproducing gulper sharks. The very low reproductive rates of gulper sharks (one pup every one to three years) means that if the stocks are well below their limit reference point, that is, the point beyond which the risk to the stock is regarded as unacceptably high (BLIM’) it would be highly unlikely to be able to recover the populations in the standard timeframe. b. Given that the level of depletion in the populations is currently unknown, it is not feasible to predict how long it will take for them to recover to either a limit reference point of 25% of unfished biomass (BLIM) or the desired ‘target’ biomass of the stock which maximises economic yield (BTARG). The SWG suggested that recovery times will be many decades, and that until further research has been completed it is not feasible to set more definitive timeframes for recovery. In the interim, setting a recovery time of three times the generation time is likely to provide a more realistic estimate based on the biological characteristics of the species. | This component of the rebuilding strategy meets the requirements of the HSP and no new information is available which would alter the estimate of the rebuilding timeframe. | **No change** - AFMA is proposing no change to the rebuilding timeframe based on scientific advice that no new information is available justifying a change. The current timeframe is consistent with the revised (2018) HSP and Guidelines.  |
| 1. Adopting monitoring ‘Option 1a’ from research project: *Research project to support the Upper slope dogfish management strategy: options for monitoring the recovery of southern dogfish and Harrisson’s dogfish” (Williams et al. 2018).*

*Logbook data, verified through on-board observers and/or electronic monitoring, depending on the fishery, continues to be collected for all Commonwealth fisheries as part of routine catch reporting, including for dogfish. However, relative abundance of dogfish is expected to be measured most reliably within closures where there is no fishing (Williams et al. 2018) and consequently, requires fishery independent surveys. This is because logbook reporting is confounded by challenges in identifying species rapidly under the current handling practices required by the Strategy. For example, dogfish are required to be cut off the line as close to the water as possible by hook operators to maximise their chances of survival but this reduces the opportunity for accurate identification. Further, increases in abundance are expected to be higher within closures and therefore more readily detectable at this* *stage of population recovery.*  | Williams et al. (2018) considered a suite of monitoring options in consultation with stakeholders and identified a preferred option “Option 1a”, for monitoring the recovery of these species.  | Supports the use of ‘Option 1a’ as it will provide a comprehensive baseline and sufficient data for new power analyses to inform continued monitoring program. | **Supported –** ‘Option 1a’includes the use of six dogfish reference areas, medium effort with four separate vessel charters, and the use of Deepwater Baited Remote Underwater Video System (DeepBRUVS) to collect additional data. It was identified by stakeholders as the preferred option for the base line survey.Using DeepBRUVS is supported due to its long-term cost effectiveness.Undertaking this project is the highest priority for AFMA in terms of the Strategy and forms the basis of the research and monitoring plan for Harrisson’s and southern dogfish. AFMA is currently identifying a source of funding to undertake the project. |
| 1. Industry proposal - request to allow dropline fishing in all dogfish closures within the area of the Gillnet, Hook and Trap (GHAT) sector

*There are a large number of closures across the Southern and Eastern Scalefish and Shark Fishery (SESSF) aimed at protecting dogfish, which exclude all fishing methods. This is on the basis that dogfish are susceptible to being caught by trawl, hook and gillnet fishing methods. Factors considered to improve survival rates from hook caught sharks are: dynamic targeting of target species, short soak time which allows sharks to be brought to the surface in relatively good condition and low numbers of fish landed together (maximum 18 based on the number of hooks set). Changes to these factors is expected to result in greater impacts on gulper sharks from other fishing techniques. Dropline gear typically is not dynamic in that it is a set line that does not remain attached to the boat, soak times can vary and more than 18 hooks are generally set.* | Industry is seeking authorisation for dropline fishing, which is a form of setline, in all dogfish closures from which this method is currently excluded. This is on the basis that in their view, dropline operators can avoid interactions with dogfish by modifying how they set their gear. | There is high likelihood of encountering and hooking dogfish, and high likelihood of capture mortality. For these reasons, this proposal represents an appreciable risk to reducing the efficacy of the Strategy.Additional research would need to be undertaken to support this position and it does not seem practically possible to overcome the issue of long dropline soak times. This was one of the reasons that droplining was not considered appropriate as a monitoring method by the Monitoring Strategy Workshops. | **No change** - AFMA does not support dropline fishing in existing dogfish closures and recognises that robust research would need to be undertaken to review the likely impacts of such operations, before considering any proposals. It is also expected that if it was proven possible to fish with no impact on dogfish that it would require an ongoing, high level of monitoring, the cost of which would be recovered from industry.  |
| 1. Industry proposal – allow the retention of *Squalus* species, excluding greeneye spurdog (*S. chloroculus*), by fishers

*Currently retention of all squalus species is prohibited on the basis that it is difficult to identify species of concern from those not of concern.*  | Industry is seeking authorisation to retain Squalidae species other than greeneye spurdog (*S. chloroculus*) if fishers can accurately identify and differentiate them from species managed under the Strategy. | The key to effective good handling of non-retained sharks and the retention of other *Squalus* species, is the ability of vessel crew to recognise Centrophoridae (gulper sharks) and greeneye spurdog (*S. chloroculus*) and differentiate them from retainable species, including *Deania* species. | **No change –** Maintain the prohibitionon all species of the Centrophoridae and Squalidae families (excluding *Deania* spp.), unless industry can provide robust evidence that they are able accurately identify and differentiate between those Squalidae species to be retained from those species managed under the Strategy.  |
| 1. Industry proposal – refine licence conditions to remove the prescriptive nature of how fishing gear must be hauled.

Currently AFMA specifies in hook licence conditions how the hauler must be slowed, dogfish must be cut off as close to the water as possible and that dogfish must not pass through the de-hooker.  | While the intent is to handle dogfish to maximise their chance of post capture survival, the prescriptive nature of the wording is difficult to adhere to at times for health and safety reasons. The intent is to not allow dogfish to pass through the de-hooker but let the operator work out how best to haul their gear to ensure dogfish are returned to the water as quickly and safely as possible for all involved, including dogfish. Further, cutting shark off at the waterline means that they still have hook in their mouth and at times, are subsequently taken by seabirds, thereby posing a risk to seabirds ingesting hooks.  | Non-retainable sharks should not pass through the de-hooker. Revising the current wording to allow dogfish to be brought on board (while still not passing through the de-hooker) would assist identification and separation of non-retainable sharks from retainable sharks, and also allow the removal of hooks prior to being released.  | **Partial change –** remove the prescription on the use of the gear but maintain the requirement for prohibiting dogfish to pass through the de-hooker.  |
| 1. Taxonomy change for southern dogfish (*Centrophorus zeehanni*) and potential implications for the strategy.

*There is an impending taxonomic change for southern dogfish (C. zeehaani).* | The HSP provides guidance where species fished in Australian waters are part of a broader internationally shared stock. This guidance, and investigation of the biological status of the international stock will inform any response required under the Strategy. | There is an impending taxonomic change for one species: *C. zeehaani* will be synonymised with *C. uyato* (Dr Will White, CSIRO pers. Comm.; 28/10/2019). Data derived from new genetic techniques show the *C. zeehaani* appears to be the same species as specimens collected off Norway (Wienerroither et al. 2014) (and other localities including Japan and India), and they are the apparently widely-distributed *C. uyato*. Whilst this alters the understanding of the species and its overall distribution, there is no change to its known range within Australian waters from that defined previously. Thus, it is limited to southern Australian waters, comprised of ‘far-western’, ‘central’ and ‘eastern’ populations split, respectively, by (1) the large area of sediment at the Head of the Bight, and (2) Tasmania (Williams et al. 2013) and represents a single management unit in the context of the Strategy.  | **No change** – The impending change does not appear that it will have implications for the species status and therefore, no material implication for the Strategy. AFMA continues to monitor scientific advice and will implement management changes where required. The known Australian distribution of the species is separate and isolated from the northern hemisphere range of *C. uyat,* withmanagement arrangements remaining focused on recovery of local stocks, consistent with the HSP. |

**References**

Williams, A., Althaus, F., Smith, A.D.M., Daley, R., Barker, B.A., Fuller, M (2013). Developing and applying a spatially based seascape analysis (the "habitat proxy" method) to inform management of gulper sharks: compendium of CSIRO discussion papers Hobart, p. 220.

Williams A, Green M.A, Althus F, Knuckey I, McLean D, Koopman M (2018) Research to support the upper-slope dogfish management strategy: options for monitoring the recovery of southern dogfish and Harrisson’s dogfish. Report to AFMA. CSIRO, Australia.