Accord sur la Conservation des Albatros et des Pétrels

Quinzième réunion du Comité consultatif

Swakopmund, Namibie, 1–5 juin 2026

Rapport du Groupe de travail sur les captures accessoires d'oiseaux marins

Groupe de travail sur les captures accessoires d'oiseaux marins

Rapport de la treizième réunion du Groupe de travail sur les captures accessoires d'oiseaux marins, Swakopmund, Namibie, 27–29 mai 2026

1. INTRODUCTION

Le présent rapport rend compte des débats et des recommandations issus de la treizième réunion du Groupe de travail sur les captures accessoires d'oiseaux marins (GTCA13), qui s'est tenue à Swakopmund, en Namibie, du 27 au 29 mai 2026.

Le Co-Président du GTCA, Igor Debski (Nouvelle-Zélande), a souhaité la bienvenue à tous les membres et observateurs du GTCA (**ANNEXE 1**) à l'occasion de la 13e réunion du GTCA. Il a également présenté le Co-Président du GTCA, Sebastián Jiménez (Uruguay), ainsi que les Vice-présidents Dimas Gianuca (BLI) et Megan Tierney (Royaume-Uni).

2. COMPOSITION DU GROUPE DE TRAVAIL

Le Co-Président a encouragé les Parties à faire le point sur les membres qu'elles ont désignés au sein du groupe de travail afin de s'assurer que la composition de celui-ci reste à jour, et a rappelé aux Parties que de nouveaux membres peuvent être désignés à tout moment. La composition actuelle du GTCA figure à l'**ANNEXE 1**.

3. ADOPTION DE L'ORDRE DU JOUR

Le Co-Président a présenté l'ordre du jour et les documents connexes. La réunion a adopté l'ordre du jour (**SBWG13 Doc 01 Rev 2**).

4. CONSEILS DE L'ACAP EN MATIÈRE DE BONNES PRATIQUES POUR L'ATTÉNUATION DES CAPTURES ACCESSOIRES D'OISEAUX MARINS

4.1 Définitions et critères

Le Co-Président a noté que ce point de l'ordre du jour permet de rappeler la nécessité permanente de revoir la définition et les critères des Conseils de l'ACAP en matière de bonnes pratiques (ci-après « les Conseils de bonnes pratiques »), afin de s'assurer qu'ils restent adaptés à leur objectif. Aucune proposition visant à modifier la définition et les critères n'a été formulée.

4.2 Structure, style et publics cibles des documents d'orientation

Conscients que les documents de Conseils de bonnes pratiques de l'ACAP constituent des livrables essentiels du GTCA, et constatant que le succès de ces documents repose en partie sur une communication claire, des travaux supplémentaires ont été menés entre les sessions afin d'étudier les possibilités de restructuration, de reformatage et de révision de ces documents, dans le but d'améliorer la communication des conseils de l'ACAP.

Le document **CC15 Doc 20** a résumé les recommandations formulées par un cabinet de conseil en communication sur les moyens d'améliorer l'accessibilité et l'adoption des Conseils de bonnes pratiques de l'ACAP, conformément à la Stratégie de communication de l'ACAP et à la Stratégie d'interaction de l'ACAP avec les ORGP. Trois options de communication, à plusieurs niveaux mais progressives, ont été proposées, chacune entraînant des coûts supplémentaires. Le niveau *Bronze* met l'accent sur la clarté, la cohérence et l'accessibilité, et nécessiterait un investissement de 17 000 £. L'option *Silver* prévoit une diffusion structurée, davantage axée sur l'engagement de publics ciblés, et nécessiterait un investissement de 30 000 £. L'option *Gold* permettrait la mise en place d'une plateforme numérique et un accompagnement proactif en matière de communication afin de favoriser un changement de comportement ; elle nécessiterait un investissement de 65 000 £.

Le GTCA13 a examiné l'utilité des Conseils de bonnes pratiques de l'ACAP au sein des ORGP, ainsi que leur absence éventuelle, et s'est demandé si le document **CC15 Doc 20** traitait de cette question. La prise de décision au sein des ORGP semble reposer en grande partie sur la culture et les valeurs, avec des facteurs géopolitiques et de marché au cœur du processus, plutôt que sur une approche purement fondée sur des données factuelles. De ce fait, il pourrait s'avérer nécessaire d'ajuster quelque peu la portée des travaux décrits afin d'atteindre les objectifs fixés en matière de changement.

Le GTCA13 a en outre estimé que la communication, à elle seule, pourrait ne pas suffire à garantir la mise en œuvre des Conseils de bonnes pratiques de l'ACAP. D'autres facteurs sont susceptibles d'entraver le changement de comportement et, bien que la Stratégie de communication de l'ACAP doive être mise en œuvre, les attentes en matière de résultats devraient en tenir compte.

Par ailleurs, les approches proposées dans le document **CC15 Doc 20** pourraient être trop axées sur les stratégies de communication envisageables, plutôt que sur *la manière dont* celles-ci seraient mises en œuvre. Afin de tirer le meilleur parti possible des options de communication proposées, le choix des mesures privilégiées parmi les différents niveaux pourrait s'avérer être l'approche la plus fructueuse. Toutefois, étant donné que les ORGP constituent le public cible essentiel pour assurer l'adoption des Conseils de bonnes pratiques de l'ACAP, la traduction est un élément clé à intégrer dans toute stratégie de communication. Il convient d'encourager davantage l'intégration des sciences sociales dans les travaux de l'ACAP afin de favoriser une meilleure adoption des Conseils de bonnes pratiques.

Birdlife International (BLI) s'est félicité des moyens de communication proposés pour soutenir la mise en œuvre des mesures d'atténuation décrites dans le document **CC15 Doc 20**, soulignant que les retours d'information fournis par le secteur via les partenaires de BLI mettent en évidence l'importance de mieux faire connaître la crise de conservation à laquelle sont confrontées les populations d'oiseaux marins, au-delà des simples avis scientifiques et techniques. BLI a donc apporté son soutien à l'approche proposée et recommande de mettre l'accent sur la traduction, ce qui impliquerait d'adopter en partie l'option « Silver », ainsi que de prendre en compte les aspects culturels dans toutes les communications. Il a en outre été noté qu'il existait de nombreuses études de cas convaincantes provenant des Parties à l'ACAP qui pourraient être intégrées dans une stratégie de communication, mais que, pour les options de niveau supérieur, cela nécessiterait des vidéos de haute qualité, lesquelles ne sont généralement pas facilement disponibles. Le BLI a donc encouragé les Parties à l'ACAP à envisager de mettre à disposition des enregistrements vidéo réalisés à bord des navires appliquant les mesures d'atténuation conformes aux bonnes pratiques de l'ACAP.

Le GTCA13 a convenu qu'il fallait intégrer le renforcement positif dans les stratégies de communication afin de veiller à ce que les réussites soient également mises en avant. Le GTCA13 a souligné qu'un changement d'approche de la part de l'ACAP était nécessaire pour parvenir à la mise en œuvre des Conseils de bonnes pratiques, et que cette stratégie de communication permettait justement ce changement d'approche, même si elle ne constituait que les premières étapes vers un changement de comportement plus large. Les mesures et les niveaux proposés devraient faire l'objet d'un examen approfondi et être adaptés afin d'optimiser les résultats compte tenu du budget alloué à ces travaux. Le GTCA a recommandé de viser la mise en œuvre du niveau « Gold » ou de sélectionner les options les plus efficaces et complémentaires au sein de chaque niveau.

RECOMMANDATIONS AU COMITÉ CONSULTATIF

Le GTCA recommande que le Comité consultatif :

1. Prenne note des options de communication stratégique proposées par Mindfully Wired Consulting pour favoriser l'adoption et la mise en œuvre de mesures d'atténuation des captures accessoires d'oiseaux marins.

2. Approuve l'affectation de ressources dans le cadre du programme de travail 2026–2028 du Comité consultatif afin de faire appel à des consultants en communication dûment qualifiés pour mener des actions visant à induire un changement de comportement dans la mise en œuvre des mesures d'atténuation des captures accessoires d'oiseaux marins.

3. Approuve la création d'un groupe intersessionnel chargé d'examiner les mesures prises en matière de communication et d'assurer la liaison avec les consultants en communication.

5. ATTÉNUATION DES CAPTURES ACCESSOIRES D'OISEAUX MARINS DANS LES PÊCHERIES AU CHALUT

5.1 Examen des récents progrès de la recherche sur l'atténuation, et mise à jour des Conseils en matière de bonnes pratiques

Le document **SBWG13 Doc 04** a fourni une version amendée (avec suivi des modifications) des Conseils de bonnes pratiques pour l'atténuation des captures accessoires d'oiseaux marins dans les pêcheries au chalut, approuvés par le CC14. Les mises à jour régulières incluent la mise à jour des sources de référence, l'amélioration de la clarté des conseils et le renforcement de la cohérence avec les documents de conseils relatifs à d'autres méthodes de pêche. Le GTCA a été invité à recenser d'éventuelles autres modifications mineures de ce type. Le GTCA a approuvé les modifications proposées et a examiné les documents de travail suivants, dont certains formulaient des recommandations supplémentaires visant à modifier ces avis.

Tout en prenant note des considérations plus générales relatives à l'amélioration de la clarté et du ciblage des recommandations de l'ACAP en matière d'atténuation, examinées au titre du point 4 de l'ordre du jour, le GTCA a identifié plusieurs modifications structurelles qui pourraient être apportées immédiatement aux documents de Conseils de bonnes pratiques afin d'en renforcer la clarté. Le GTCA a notamment décidé de diviser les documents de Conseils de bonnes pratiques en deux parties : un résumé concis des Conseils de bonnes pratiques et un document d'analyse complet. Il a été convenu que le document de synthèse devrait se concentrer sur les mesures d'atténuation relevant des bonnes pratiques, supprimer les sections consacrées aux mesures d'atténuation en cours d'élaboration et énumérer brièvement les mesures jugées non recommandées. Toutes les informations supprimées du résumé des recommandations et de l'introduction générale seraient conservées dans le document complet et détaillé consacré à l'analyse documentaire des mesures d'atténuation. Il a été convenu que cette approche devait également s'appliquer aux documents de Conseils de bonnes pratiques concernant les pêcheries à la palangre démersale et pélagique.

Le Co-Président a indiqué que plusieurs documents avaient été reçus concernant les opérations de pêche au chalut au krill en continu dans la zone de la CCAMLR. Le document **SBWG13 Inf 02** a présenté une synthèse des discussions en cours au sein de la CCAMLR concernant les captures accessoires d'oiseaux marins et les mesures d'atténuation dans cette pêcherie, et a fourni un contexte précieux au GTCA.

La mesure de conservation CCAMLR 25-03 (2024) interdit le rejet d'abats et de rejets lors du filage et du halage des engins de pêche au chalut à krill, bien qu'elle autorise le rejet de *stick water* (sous-produit liquide issu de la transformation des captures), étant entendu que celui-ci ne constitue pas une source de nourriture et n'attire pas les oiseaux marins vers les navires de pêche. Le document **SBWG13 Doc 20** a indiqué que des informations récentes issues d'une analyse documentaire montrent que les albatros, les pétrels et les puffins, qui s'appuient principalement sur des repères olfactifs pour se nourrir et s'orienter, sont attirés par les engins de pêche au chalut lorsque du *stick water* est rejeté, ce qui remet en cause l'hypothèse de la CCAMLR. Des composés odorants comme les pyrazines sont libérés lorsque le krill est broyé ou endommagé, une situation susceptible de se produire lorsque des bancs de krill sont la proie de prédateurs plongeurs, mais aussi en tant que sous-produit des opérations de pêche.

Le GTCA13 a examiné les recommandations à formuler à l'intention du prochain groupe de travail de la CCAMLR sur la mortalité accidentelle liée à la pêche (WG-IMAF) concernant le rejet de *stick water* par les chalutiers à krill, notamment l'intérêt : (i) de mener des analyses visant à mieux comprendre la structure, l'abondance et le comportement des assemblages d'oiseaux marins au cours des différentes phases de l'opération de pêche au krill ; (ii) de mener des analyses approfondies du *stick water*, allant au-delà du niveau fourni par la récente étude, et (iii) d'adopter une approche de précaution, conformément à la mesure de conservation (CM) 25-03 de la CCAMLR concernant le rejet de *stick water*, jusqu'à ce que son potentiel d'attraction soit clarifié. Il a été noté que le rejet de *stick water* sous l'eau pourrait constituer un moyen de réduire l'attrait de ces rejets et mérite d'être étudié plus en détail, même si la faisabilité de cette solution n'était pas clairement établie.

Le document **SBWG13 Doc 18** a actualisé les informations sur les mesures élaborées pour les navires de pêche au krill utilisant la méthode de chalutage en continu et le câble de surveillance des filets (NMC), précédemment communiquées à l'ACAP dans SBWG12 Doc 16. Plus précisément, l'étude s'est penchée sur la mise au point du « manchon », un tube destiné à être enfilé autour du câble afin de le rendre plus visible pour les oiseaux et d'offrir une certaine protection en cas de collision. Le concept a évolué depuis son lancement en 2020 ; sa dernière version permet au manchon de toucher la surface de l'eau, ce qui réduit la surface exposée du câble et entraîne ainsi une diminution du taux de collisions d'oiseaux.

Le document **SBWG13 Doc 19 Rev 1** a fait état de la mise au point, au Chili, de plusieurs mesures d'atténuation visant à remédier aux interactions entre les oiseaux marins et les NMC. Les nouvelles réglementations relatives aux mesures d'atténuation visant à réduire les interactions entre les oiseaux marins et les chalutiers équipés de NMC prévoient notamment la mise en place obligatoire d'un système de rideaux combinés pour les NMC, présenté précédemment dans le document SBWG12 Inf 19. La mise en place du système de rideaux au cours du second semestre de 2025 s'est accompagnée d'une baisse du taux de captures accessoires déclaré, qui est passé de 0,031 oiseau/h en 2017 à 0,013 oiseau/h en 2025. La baisse des taux de mortalité observée en 2025 s'explique par l'adoption volontaire des rideaux NMC avant la mise en œuvre obligatoire de cette mesure. Des observations préliminaires suggèrent en outre que l'utilisation combinée de ce rideau et de lignes d'effarouchement des oiseaux optimise la réduction des interactions avec les oiseaux marins et peut diminuer les taux de captures accessoires. Le rideau NMC présente des avantages en termes de coût, de faisabilité opérationnelle et de sécurité de l'équipage. Cependant, ces résultats restent préliminaires. Ils nécessiteront de nouveaux ajustements dans les protocoles de surveillance afin de tenir compte du potentiel de mortalité cryptique, lequel pourrait entraîner une sous-estimation de la mortalité totale, soulignant ainsi la nécessité d'intégrer des méthodes permettant de mieux quantifier sa fréquence. Le GTCA a accepté d'inclure cette mesure d'atténuation combinée comme méthode alternative pour les NMC lorsque leur utilisation ne peut être évitée, tout en conservant, à ce stade, le Conseil de bonnes pratiques selon lequel les NMC doivent être évités dans la mesure du possible.

Ces documents ont suscité de nombreux débats sur l'atténuation des captures accessoires liées à la pêche au chalut, notamment en ce qui concerne le recours continu aux NMC et les meilleurs moyens de minimiser la mortalité des oiseaux marins lorsque leur utilisation ne peut être évitée. Le GTCA a reconnu que certains des Conseils de bonnes pratiques actuels pour les pêcheries au chalut pouvaient ne pas être applicables aux chalutiers à filet continu ; il a donc décidé de modifier ces Conseils afin d'établir une distinction entre l'utilisation des engins de pêche au chalut traditionnels et celle des engins à filet continu. Il a également été noté qu'une grande partie des Conseils de bonnes pratiques de l'ACAP ne s'applique pas aux opérations de pêche au chalut en continu, en raison de la faible vitesse de remorquage, qui peut rendre la mise en place des lignes d'effarouchement des oiseaux (BSL) peu pratique. Il a également été observé que, lorsqu'ils sont utilisés dans des chaluts continus, les NMC ont une portée aérienne réduite ; ils pénètrent généralement dans l'eau de manière quasi verticale et à proximité immédiate de la fune, ce qui présente donc un risque moindre pour les oiseaux marins. Le GTCA a décidé de maintenir la recommandation actuelle selon laquelle les NMC ne sont pas recommandés. Toutefois, compte tenu du fait que ces câbles continuent d'être utilisés dans la pêche au chalut, il a été convenu d'inclure des recommandations d'atténuation lorsque de telles mesures ont été mises au point, notamment dans le cadre d'opérations de pêche au chalut en continu. De nouvelles sections ont été ajoutées au document d'examen des mesures d'atténuation afin de décrire les deux options d'atténuation présentées dans les documents **SBWG13 Doc 18** et **SBWG13 Doc 19 Rev 1.** Ces options figuraient dans le résumé des Conseils de bonnes pratiques pour les cas où l'utilisation de NMC ne peut être évitée.

Les documents d'information supplémentaires suivants ont également été brièvement présentés lors de la réunion, et les auteurs ont été remerciés d'avoir fourni ces informations afin de faciliter les travaux de l'ACAP.

SBWG13 Inf 01 Interactions des oiseaux marins avec les câbles de chalut à bord des navires de la côte ouest des États-Unis ciblant le merlu du Pacifique.

SBWG13 Inf 03 Évaluation de l'efficacité des mesures d'atténuation des captures accessoires d'oiseaux marins dans les pêcheries au chalut pratiquées par de grands navires en Nouvelle-Zélande.

Joint SBWG13/PaCSWG9 Inf 15 Comparaison trophique interspécifique à l'aide de deux méthodes complémentaires chez deux espèces d'albatros sympatriques du plateau continental patagonien austral.

Un autre document, **Joint SBWG13/PaCSWG9 Inf 17**, sur les collisions d'oiseaux marins avec les câbles des navires de prospection sismique dans l'Atlantique Sud-Ouest, a également été présenté. Ce document a décrit des essais de mesures d'atténuation à l'aide de lignes d'effarouchement des oiseaux (BSL). Le GTCA a conclu que, bien que les mesures d'atténuation mises en œuvre puissent présenter des similitudes avec celles élaborées pour les navires de pêche, ce sujet ne relevait pas de la pêche ni des travaux connexes du GTCA. Il a été suggéré que la réunion conjointe du GTCA et du GTSPC constituerait à l'avenir un cadre plus approprié pour examiner ces travaux.

5.2 Examen des priorités en matière de recherche sur les mesures d'atténuation

Le GTCA a passé en revue les principales priorités en matière de recherche sur la réduction des captures accessoires d'oiseaux marins dans les pêcheries au chalut et a recommandé qu'elles soient les suivantes :

Atténuation des effets des câbles : poursuivre le développement et l'expérimentation d'options d'atténuation visant à réduire les interactions des oiseaux marins avec les câbles, en particulier les câbles de surveillance des filets (NMC), y compris de nouveaux dispositifs de dissuasion (notamment des rideaux), de nouveaux matériaux pour les câbles et des moyens de réduire l'étendue aérienne, ainsi que la prise en compte par les pêcheries d'une gamme de pratiques opérationnelles différentes ;

Interactions avec les câbles : déterminer les relations entre l'abondance des oiseaux marins, les interactions avec les câbles et la mortalité (quantifier le niveau de mortalité non détectée ou cryptique), y compris la possibilité d'utiliser la surveillance électronique (EM) des collisions avec les câbles ;

Enchevêtrement dans les filets : poursuivre le développement et l'expérimentation d'options visant à réduire les interactions entre les oiseaux marins et les engins de pêche au chalut afin de réduire les cas d'enchevêtrement ou de capture d'oiseaux marins dans les filets lors du filage et du virage ;

Rejets : approfondir l'évaluation du niveau d'attraction des oiseaux par le *stick water* ou par d'autres rejets qui ne sont normalement pas considérés comme faisant partie du rejet d'abats ou des rejets de captures. Il conviendrait d'étudier la possibilité de rejeter du *stick water* sous l'eau.

Igor Debski, Marco Favero et Leandro Tamini ont été désignés comme responsables du GTCA chargés de l'atténuation des captures accessoires dans les pêcheries au chalut. Veronica Iriarte a été remerciée pour le travail qu'elle a accompli en tant qu'ancienne co-responsable.

RECOMMANDATIONS AU COMITÉ CONSULTATIF

Le GTCA recommande que le Comité consultatif :

4. Prenne note des modifications apportées aux Conseils de bonnes pratiques pour les pêcheries au chalut, qui donnent lieu à la création de deux documents distincts et incluent désormais des références à des mesures d'atténuation supplémentaires concernant l'utilisation de câbles de surveillance des filets (NMC) lorsque celle-ci ne peut être évitée.
5. Approuve l'analyse actualisée et les Conseils de bonnes pratiques visant à réduire l'impact des pêcheries au chalut pélagique et démersal sur les oiseaux marins, figurant dans les **ANNEXES 2** et **3**, qui tiennent compte des derniers résultats de recherche présentés au GTCA13.
6. Encourage la mise en œuvre des priorités de recherche en matière d'atténuation des captures accessoires dans les pêcheries au chalut.

6. ATTÉNUATION DES CAPTURES ACCESSOIRES D'OISEAUX MARINS DANS LES PÊCHERIES À LA PALANGRE DÉMERSALE

6.1 Examen des récents progrès de la recherche sur l'atténuation, et mise à jour des Conseils en matière de bonnes pratiques

Le document **SBWG13 Doc 05** a fourni une version amendée (avec suivi des modifications) des Conseils de bonnes pratiques pour l'atténuation des captures accessoires d'oiseaux marins dans les pêcheries à la palangre démersale, approuvés par le CC14. Les mises à jour régulières incluent la mise à jour des sources de référence, l'amélioration de la clarté des conseils et le renforcement de la cohérence avec les documents de conseils relatifs à d'autres méthodes de pêche. Par ailleurs, il avait été proposé de supprimer ou de préciser certaines sections jugées non pertinentes pour la pêche à la palangre démersale. Le GTCA13 a identifié quelques modifications mineures supplémentaires visant à clarifier, le cas échéant, les définitions des classes de taille des navires et à harmoniser la terminologie avec la boîte à outils de l'ACAP relative aux mesures d'atténuation dans les pêcheries artisanales et à petite échelle. Le GTCA a par ailleurs noté que le document de Conseils de bonnes pratiques serait divisé en deux parties, comme cela avait été évoqué au point 5.1 de l'ordre du jour, et a approuvé les modifications proposées. Le GTCA13 a ensuite examiné les documents suivants, dont certains formulaient des recommandations supplémentaires visant à modifier ces conseils.

Le document **SBWG13 Doc 17** a présenté des analyses des données issues d'enregistreurs de temps et de profondeur concernant trois espèces de pétrels du genre *Procellaria* présentes en Nouvelle-Zélande, soulignant que ces espèces sont capables de plonger profondément, rapidement et de nuit, ce qui a des implications pour l'atténuation des captures accessoires d'oiseaux marins dans les pêcheries à la palangre pélagiques et démersales. Le GTCA13 a examiné les implications en matière de risque de captures accessoires dans la pêche à la palangre démersale, en soulignant que l'étude portait davantage sur le comportement de plongée que sur la mortalité, mais que la littérature existante indique généralement un taux de captures accessoires d'oiseaux marins plus élevé lors des opérations menées de jour, avec une augmentation potentielle du risque nocturne pendant les périodes de pleine lune. Le GTCA a convenu que des références pertinentes devaient être ajoutées au document de Conseils de bonnes pratiques.

Le document **SBWG13 Inf 04** a présenté une mise à jour provenant de Nouvelle-Zélande concernant un outil de gestion du taux d'immersion destiné aux pêcheries démersales à la palangre pratiquées par de petits navires. Cet outil intègre les données TDR dans une application mobile permettant la visualisation en temps réel des taux d'immersion et facilitant la gestion adaptative ainsi que le respect des bonnes pratiques. Le GTCA a convenu qu'il fallait ajouter une référence à ce type de développement d'outils dans le document de Conseils de bonnes pratiques.

6.2 Priorités en matière de recherches sur l'atténuation

Le GTCA a confirmé les priorités suivantes en matière de recherche sur l'atténuation pour les pêcheries palangrières démersales :

Amélioration du taux d'immersion : poursuivre l'identification de mesures d'atténuation permettant d'améliorer le taux d'immersion des hameçons appâtés sur les palangres flottantes, notamment la réduction du nombre d'hameçons positionnés près des flotteurs, ainsi que la forme et la conception des lests afin d'atteindre un taux d'immersion plus élevé, et l'utilisation de flotteurs largueurs. Synthétiser l'expérience et les informations provenant d'autres pêcheries démersales à la palangre flottante afin de contribuer à l'élaboration de recommandations pour cet engin.

Dispositifs d'atténuation lors du virage : poursuivre les études sur l'atténuation durant le virage dans les pêcheries démersales (et pélagiques), notamment des essais en mer afin de vérifier l'efficacité de ces dispositifs sur une large gamme d'opérations de pêche.

Ed Melvin, Juan Pablo Seco Pon et Megan Tierney restent les responsables du GTCA concernant les conseils sur l'atténuation des captures accessoires dans les pêcheries démersales à la palangre.

RECOMMANDATIONS AU COMITÉ CONSULTATIF

Le GTCA recommande que le Comité consultatif :

7. Approuve l'analyse actualisée et les Conseils de bonnes pratiques visant à réduire l'impact de la pêche à la palangre démersale sur les oiseaux marins, figurant dans les **ANNEXES 4** et **5**, qui tiennent compte des derniers résultats de recherche présentés au GTCA13.
8. Encourage la mise en œuvre des priorités de recherche en matière d'atténuation des captures accessoires dans les pêcheries démersales à la palangre.

7. ATTÉNUATION DES CAPTURES ACCESSOIRES D'OISEAUX MARINS DANS LES PÊCHERIES À LA PALANGRE PÉLAGIQUE

7.1 Examen des récents progrès de la recherche sur l'atténuation, et mise à jour des Conseils en matière de bonnes pratiques

Le document **SBWG13 Doc 06** a fourni une version modifiée, avec suivi des modifications, des Conseils de bonnes pratiques pour l'atténuation des captures accessoires d'oiseaux marins dans les pêcheries à la palangre pélagique, approuvés par le CC14. Le GTCA a approuvé les modifications proposées et a noté que le document de Conseils de bonnes pratiques serait divisé en deux parties, comme cela a été évoqué au point 5.1 de l'ordre du jour.

Le GTCA13 a examiné une série de documents traitant des avancées récentes en matière d'atténuation des captures accessoires d'oiseaux marins dans les pêcheries à la palangre pélagique, en mettant particulièrement l'accent sur les systèmes de lestage des hameçons, les performances en termes de taux d'immersion, les technologies émergentes, la modification des engins de pêche et les phases opérationnelles influençant le risque de captures accessoires. Certains de ces documents formulaient d'autres recommandations visant à modifier ces conseils.

Le document **SBWG13 Doc 10 Rev 1** a présenté les nouvelles lignes directrices de l'ACAP relatives à la mesure du taux d'immersion des hameçons appâtés dans les pêcheries à la palangre pélagique à l'aide d'enregistreurs temps-profondeur (TDR). Le GTCA a noté que ces lignes directrices avaient été demandées par le CC13 à la suite de l'intégration d'un critère de taux d'immersion minimal de 0,5 m/s jusqu'à une profondeur de 5 m dans les Conseils de bonnes pratiques de l'ACAP relatives à la pêche à la palangre pélagique. Ces lignes directrices avaient été jugées utiles pour faciliter l'examen des mesures d'atténuation des captures accessoires d'oiseaux marins au sein de plusieurs ORGP thonières. Le GTCA a recommandé d'adopter ces lignes directrices, soulignant que de telles approches sont essentielles pour garantir la comparabilité entre les études et les pêcheries, et qu'il convient d'encourager vivement leur promotion au sein des ORGP concernées.

Les documents **SBWG13 Doc 12** et **SBWG13 Inf 08** ont examiné les performances des configurations de lestage des hameçons et les taux d'immersion associés. Le GTCA a relevé des données solides et cohérentes indiquant que l'efficacité des mesures d'atténuation dépend fortement de la configuration des engins de pêche, des pratiques de déploiement et des conditions environnementales. Il a été convenu que le lestage des lignes restait une mesure d'atténuation essentielle et que le critère de 0,5 m/s jusqu'à une profondeur de 5 m restait approprié. Le Conseil de bonnes pratiques de l'ACAP concernant l'utilisation d'un poids d'au moins 50 g pour les hameçons lestés n'a pas été modifié, compte tenu de la variabilité des taux d'immersion des hameçons plus légers de grande taille.

Des inquiétudes ont été exprimées quant à la mise en œuvre concrète et à la vérification de ces normes en mer. Le GTCA13 a notamment mis en évidence les difficultés rencontrées pour démontrer la conformité au sein de flottes présentant des configurations d'engins et des pratiques opérationnelles différentes. Le GTCA a recommandé que les taux d'immersion soient évalués dans des conditions opérationnelles, conformément aux lignes directrices établies par l'ACAP. Le GTCA a reconnu qu'il convenait de tenir compte de la variabilité des taux d'immersion des différents avançons, et qu'il pourrait être opportun de fixer à l'avenir un seuil minimal de variation acceptable ; par exemple, x % des taux d'immersion devraient répondre au critère cible.

Le GTCA13 a pris acte et s'est félicité de l'important travail accompli dans ce domaine, soulignant qu'il met en évidence l'importance des normes fondées sur la performance, assorties de critères de conformité clairs, mesurables et applicables sur le plan opérationnel.

Le document **SBWG13 Doc 14** a examiné différentes alternatives aux matériaux de lestage à base de plomb. Le GTCA a soutenu les efforts visant à réduire le recours au plomb pour des raisons liées à l'environnement et à la santé humaine, mais a souligné que toute solution de remplacement devait présenter un taux d'immersion équivalent ou supérieur. Il a été souligné qu'une approche de précaution s'imposait afin d'éviter toute diminution involontaire de l'efficacité des mesures d'atténuation.

Le GTCA a réaffirmé son soutien sans réserve aux conseils de longue date de l'ACAP selon lesquels la mise en œuvre simultanée de plusieurs mesures est nécessaire pour parvenir à des réductions significatives des captures accessoires d'oiseaux marins. Cette position a été renforcée par les données écologiques présentées dans le document **SBWG13 Doc 17**, qui ont démontré la capacité des pétrels du genre *Procellaria* à plonger à de grandes profondeurs et leur vulnérabilité persistante face aux hameçons à des profondeurs inférieures à 5 mètres. Il a été noté qu'il pourrait être nécessaire d'obtenir des taux d'immersion plus rapides et/ou de disposer de dispositifs de protection des hameçons à ouverture plus profonde afin de réduire efficacement les captures accessoires d'oiseaux marins dans les pêcheries opérant dans des zones où l'on trouve des pétrels plongeant en profondeur.

Le document **SBWG13 Doc 13** a soulevé des préoccupations quant à l'utilisation de dispositifs électroluminescents (LED), soulignant que ceux-ci pourraient modifier la dynamique du taux d'immersion et potentiellement accroître le risque de captures accessoires si leurs effets ne sont pas pleinement compris. Il a été convenu que ces technologies devaient faire l'objet d'une évaluation minutieuse au regard des normes de performance avant d'être adoptées à plus grande échelle.

Le document **SBWG13 Doc 15** n'a fait état d'aucune interaction entre des oiseaux marins et une configuration de palangre en boucle (palangre-piège) dans les pêcheries palangrières pélagiques de la Méditerranée occidentale. De même, le document **SBWG13 Inf 06** a présenté une analyse de l'utilisation des lignes en boucle ou « *meka-rings* » dans la pêche à la palangre au Japon. Les deux documents indiquaient que cette configuration d'engins de pêche n'entraînait aucune capture accessoire d'oiseaux marins. Le GTCA13 a salué cette conclusion, qu'il a jugée encourageante, tout en soulignant que ces résultats étaient spécifiques à certaines régions. Aucune information n'a été fournie concernant les interactions avec d'autres taxons non ciblés (y compris le risque d'enchevêtrement), et il serait utile de mener des recherches supplémentaires afin de mieux comprendre dans quelle mesure la configuration des lignes en boucle contribue à l'absence totale de captures accessoires d'oiseaux marins observée dans les pêcheries où elles sont utilisées en combinaison avec des hameçons classiques. Le GTCA13 a en outre souligné que les mesures d'atténuation existantes restaient nécessaires lorsque des lignes en boucle étaient utilisées en complément des hameçons, et que cette configuration d'engin devait être validée dans un éventail plus large de pêcheries et de communautés d'oiseaux marins.

Le document **SBWG13 Inf 07** a rendu compte des progrès réalisés dans le développement de l'hameçon lourd « Procella », destiné à améliorer l'immersion de l'appât et, par conséquent, à réduire les captures accessoires d'oiseaux marins, tout en simplifiant le processus opérationnel de lestage des lignes.

Le GTCA13 a également examiné les éléments d'information relatifs à des phases opérationnelles qui avaient été sous-évaluées auparavant. Le document **SBWG13 Doc 16** a mis en évidence le risque d'interactions avec les oiseaux marins pendant la période d'immersion, ce qui a suscité un débat visant à déterminer si les cadres actuels de mesures d'atténuation tiennent suffisamment compte des risques au-delà de la phase de pose. Il a été souligné qu'il existait des études portant sur des questions similaires dans le secteur de la pêche en Méditerranée, qui pourraient être mises en commun afin d'alimenter la réflexion sur ce sujet. Les participants ont unanimement reconnu et exprimé leur inquiétude quant au fait que les captures accessoires d'oiseaux marins pendant la période d'immersion pourraient être sous-estimées ou mal quantifiées, et ont convenu qu'il s'agissait là d'une lacune importante dans les connaissances. Il a également été relevé que les mesures préliminaires mises en œuvre pour éviter que les hameçons ne deviennent accessibles pendant la période d'immersion étaient difficiles à appliquer sur le plan opérationnel, et que ces mesures, ainsi que d'autres, devaient faire l'objet d'une étude plus approfondie.

Une étude comportementale (**SBWG13 Inf 05**) a examiné l'influence de certaines caractéristiques des appâts, telles que la couleur, sur les interactions avec les oiseaux marins. Le GTCA13 a noté que, bien que de telles approches puissent offrir des possibilités de mesures d'atténuation innovantes et spécifiques à chaque espèce, ces résultats restent préliminaires et doivent faire l'objet d'une validation plus approfondie avant toute mise en œuvre opérationnelle. Des études antérieures ont mis en évidence un phénomène d'accoutumance assez rapide, la couleur perdant progressivement de son importance dans l'attrait de l'appât, ce qui s'accompagne de difficultés à teindre les appâts surgelés. Dans l'ensemble, il a été estimé que les appâts colorés ne devaient pas être recommandés en tant que mesure d'atténuation.

À travers l'ensemble des travaux présentés, le GTCA a mis en avant plusieurs points généraux :

- Les normes d'atténuation fondées sur les performances, en particulier les seuils de taux d'immersion, bénéficient d'un large soutien ;
- Des preuves claires et supplémentaires ont été présentées, démontrant que des mesures combinées sont indispensables pour réduire efficacement les captures accessoires d'oiseaux marins ;
- Il est important de continuer à évaluer de manière rigoureuse les technologies émergentes ;
- La mise en œuvre, le respect des règles et la faisabilité opérationnelle restent des contraintes majeures.

Le GTCA13 a également souligné que, malgré les progrès réalisés dans la recherche sur les mesures d'atténuation, leur mise en œuvre et leur adoption restent les principaux obstacles à la réduction des captures accessoires d'oiseaux marins dans de nombreuses pêcheries à la palangre pélagique.

En résumé, le GTCA a convenu que :

i. La mesure des taux d'immersion devrait être effectuée conformément aux lignes directrices de l'ACAP relatives à la mesure du taux d'immersion des hameçons appâtés dans les pêcheries à la palangre pélagique (**SBWG13 Doc 10 Rev 1**) ; et

ii. Il pourrait s'avérer nécessaire d'accélérer le taux d'immersion et/ou d'utiliser des dispositifs de protection des hameçons à ouverture plus profonde afin de réduire efficacement les captures accessoires d'oiseaux marins dans les zones où vivent des pétrels plongeant en profondeur (**SBWG13 Doc 17**).

iii. Il conviendrait de poursuivre les travaux intersessionnels afin d'examiner le risque de captures accessoires d'oiseaux marins pendant la période d'immersion et de s'efforcer d'élaborer des recommandations visant à atténuer ce risque (**SBWG13 Doc 16**).

iv. Il conviendrait de poursuivre les travaux intersessionnels afin d'évaluer les effets des configurations des lignes en boucle sur les captures accessoires d'oiseaux marins lors des opérations de pêche à la palangre (**SBWG13 Doc 15**).

7.2 Priorités en matière de recherches sur l'atténuation

Le GTCA a passé en revue les principales priorités pour la recherche sur la réduction des captures accessoires d'oiseaux marins dans les pêcheries pélagiques à la palangre et a recommandé qu'elles soient les suivantes :

Avançons lestés : mener d'autres recherches collaboratives sur le terrain concernant les liens entre les Conseils actuels de l'ACAP en matière de bonnes pratiques relatifs à la configuration du lestage des avançons et la mortalité et/ou les taux d'attaque des oiseaux marins qui en résultent, les conséquences sur les taux de capture des espèces ciblées, les captures accessoires d'autres espèces (les tortues de mer, par exemple) et les questions de sécurité liées au lestage des lignes. Mener des recherches supplémentaires pour étudier l'effet de la longueur totale des avançons sur le taux d'immersion.

Amélioration du lestage des avançons pour les pêcheries en haute mer : Des taux d'immersion élevés en faible profondeur sont avantageux pour la conservation des oiseaux marins, et sont particulièrement importants en l'absence de lignes d'effarouchement des oiseaux (BSL) ou de pose de nuit. Un taux d'immersion minimal de 0,5 m/s jusqu'à une profondeur de 5 m (évalué conformément aux lignes directrices de l'ACAP relatives à la mesure du taux d'immersion des hameçons appâtés dans les pêcheries à la palangre pélagique) devrait être pris en compte pour éclairer l'élaboration de nouveaux régimes de lestage. Un poids unique, ou une version améliorée du système de double poids existant, pourrait constituer la meilleure option de lestage sur le plan opérationnel. Le taux d'immersion obtenu avec d'autres matériaux (par exemple, les LED) doit être quantifié de manière fiable. Une approche pluridisciplinaire, impliquant éventuellement des membres clés de l'industrie de la pêche, des ingénieurs maritimes et tout autre profil jugé approprié, est encouragée.

Dispositifs de protection des hameçons : mener d'autres recherches sur le terrain afin d'évaluer les contributions relatives du taux d'immersion et des éléments protecteurs qui composent les dispositifs de protection des hameçons dans la réduction des captures accessoires (y compris par enchevêtrement). La recherche sur les dispositifs de protection des hameçons devrait également porter sur leur durabilité à long terme ou leur taux de défaillance, ainsi que sur la possibilité d'augmenter la profondeur (ou la durée) de la protection fournie. Des recherches supplémentaires sur l'efficacité du Hookpod-mini (48 g) sont encouragées. Les recherches portant sur les performances des dispositifs de protection des hameçons, quels qu'ils soient, doivent recueillir des données concernant les attaques d'oiseaux marins sur les hameçons appâtés afin d'évaluer le risque d'enchevêtrement ou d'ingestion avec l'appât.

Lignes d'effarouchement des oiseaux (BSL) : en la matière, la principale priorité reste le développement de configurations des lignes d'effarouchement pour les navires plus petits, et l'élaboration de méthodes qui minimisent l'enchevêtrement de la partie immergée des lignes d'effarouchement avec les flotteurs des palangres, tout en créant une résistance suffisante pour maximiser l'étendue aérienne. Les activités de recherche visant à évaluer l'efficacité d'une seule ligne d'effarouchement des oiseaux par rapport à deux, les caractéristiques de conception des lignes d'effarouchement (longueur des banderoles, configurations et matériaux) et les méthodes permettant de les récupérer et de les ranger efficacement restent des priorités de recherche.

Période de la journée : déterminer l'efficacité relative des lignes d'effarouchement des oiseaux et du lestage des avançons la nuit en caractérisant le comportement nocturne des oiseaux marins.

Dispositifs sous-marins de pose d'appâts : évaluer les performances avec des avançons lestés ou non.

Combinaisons de mesures d'atténuation : évaluer l'efficacité et le caractère additif de l'utilisation simultanée de diverses combinaisons de deux méthodes d'atténuation issues des bonnes pratiques (pose de nuit, lestage des avançons et lignes d'effarouchement des oiseaux), comme le prévoient les mesures existantes de conservation des oiseaux marins établies par les Organisations régionales de la gestion des pêches (ORGP). Continuer à évaluer l'efficacité et le caractère additif de l'utilisation simultanée des trois mesures d'atténuation recommandées dans les bonnes pratiques de l'ACAP, notamment les taux de capture comparatifs aussi bien pour les captures accessoires que pour les espèces ciblées.

Matériaux de lestage : développer et évaluer des matériaux alternatifs ne dépendant pas du plomb et permettant d'atteindre les taux d'immersion recommandés pour les avançons.

Technologies nouvelles/émergentes : continuer à développer des technologies nouvelles et/ou émergentes. Envisager également des innovations en matière de contrôle indépendant des activités de pêche.

Écologie sensorielle : encourager et initier des recherches destinées à examiner les capacités sensorielles des oiseaux marins (systèmes visuels, acoustiques et olfactifs) afin d'alimenter le développement de technologies et de mesures d'atténuation sûres basées sur la sensorialité comme alternative aux approches par tâtonnements. Cette priorité de recherche trouve des applications dans l'élaboration d'options d'atténuation pour un large éventail de méthodes de pêche et dans les installations d'éoliennes en mer.

Capture d'oiseaux vivants lors du virage : étudier la nature et l'étendue de la capture d'oiseaux vivants lors du virage dans les pêcheries à la palangre pélagique.

Technologies d'atténuation du virage : développer des méthodes permettant de minimiser l'accrochage d'oiseaux marins lors de la récupération des hameçons. Encourager la poursuite des recherches visant à atténuer les captures accessoires sur les navires de petite taille lors du virage.

Captures accessoires d'oiseaux marins pendant les périodes d'immersion : Déterminer l'incidence et les taux de captures accessoires d'oiseaux marins pendant la période d'immersion. Mettre au point et évaluer des méthodes permettant de réduire au minimum le risque d'accrochage des oiseaux marins pendant la période d'immersion.

Lignes en boucle : encourager la recherche visant à déterminer l'incidence et les taux de captures accessoires d'oiseaux marins sur les lignes-pièges/en boucle et les *meka rings*.

Fermetures temporelles et spatiales : mettre à jour les cartes illustrant le chevauchement entre le suivi des oiseaux marins et l'effort de pêche afin de proposer des options pour la gestion temporelle et spatiale, notamment en analysant les impacts potentiels des fermetures spatiales et l'effet de déplacement.

Masse et conception des hameçons : étudier les modifications de la masse et de la conception des hameçons afin de déterminer si elles permettent de réduire le risque de mortalité des oiseaux marins dans les pêcheries palangrières sans affecter négativement les taux de capture des espèces ciblées ni des autres espèces faisant l'objet de captures accessoires. Il est recommandé de mener des recherches supplémentaires sur l'efficacité d'une masse d'hameçon plus légère.

Sebastián Jiménez et Dimas Gianuca seront les responsables du GTCA chargés des conseils sur l'atténuation des captures accessoires dans les pêcheries à la palangre pélagique. Jonathon Barrington a été remercié pour le rôle moteur qu'il a joué par le passé dans ce domaine.

RECOMMANDATIONS AU COMITÉ CONSULTATIF

Le GTCA recommande que le Comité consultatif :

9. Approuve les Conseils de bonnes pratiques actualisés visant à réduire l'impact de la pêche à la palangre pélagique sur les oiseaux marins, figurant dans les **ANNEXES 6** et **7**, qui tiennent compte des derniers résultats de recherche présentés au GTCA13.
10. Prenne note que les modifications apportées aux Conseils de bonnes pratiques prévoient notamment que la mesure des taux d'immersion doit être effectuée conformément aux lignes directrices de l'ACAP et qu'il peut s'avérer nécessaire d'accélérer ces taux d'immersion ou d'utiliser des dispositifs de protection des hameçons à ouverture plus profonde afin de réduire efficacement les captures accessoires d'oiseaux marins dans les zones où l'on trouve des pétrels plongeant en profondeur.
11. Approuve les lignes directrices actualisées de l'ACAP relatives à la mesure du taux d'immersion des hameçons appâtés dans les pêcheries à la palangre pélagique à l'aide d'enregistreurs temps-profondeur, figurant à l'**ANNEXE 8**.
12. Encourage la mise en œuvre des priorités de recherche en matière d'atténuation des captures accessoires dans les pêcheries à la palangre pélagique.

8. PÊCHE ARTISANALE ET À PETITE ÉCHELLE

8.1 Examen des évolutions récentes en matière de recherche sur l'atténuation et mise à jour des conseils de la boîte à outils

Le document **SBWG13 Doc 21** a rendu compte des captures accessoires d'oiseaux marins dans la pêche artisanale à la palangre pélagique du sud du Pérou et a évalué les stratégies d'atténuation mises en œuvre au cours de trois campagnes saisonnières menées en avril, juin et octobre 2024 dans les eaux au large du sud du Pérou. Des mesures d'atténuation ont été mises en œuvre dans le cadre des opérations de pêche à la palangre pendant la saison de forte densité d'oiseaux marins (de l'automne à l'hiver). Le prototype de ligne « *tori* » péruvienne mis au point s'est révélé rentable et a été développé en étroite collaboration avec les pêcheurs artisanaux. Ces méthodes ont permis de réduire considérablement les captures accessoires d'oiseaux marins tout en préservant la viabilité économique des communautés de pêcheurs.

Le GTCA13 a souligné les avantages directs en matière de conservation découlant de ce projet financé par l'ACAP pour des espèces telles que *Phoebastria irrorata* et a également salué la bonne collaboration entre le Pérou et la Nouvelle-Zélande tout au long de ce projet.

Le GTCA a décidé d'intégrer ces résultats dans la boîte à outils contenant des recommandations en matière d'atténuation pour la pêche artisanale et à petite échelle, et a convenu que l'ACAP devrait encourager les autres entités ayant compétence sur les pêcheries artisanales à la palangre concernées à poursuivre l'élaboration et la mise en œuvre de mesures d'atténuation visant à réduire le risque de captures accessoires. D'autres études pilotes visant à évaluer les mesures d'atténuation dans d'autres pêcheries artisanales péruviennes présentant un risque de mortalité pour les albatros, les pétrels et les puffins ont également été proposées.

Le document **SBWG13 Inf 09** a fait état des mises à jour apportées au système NISURI Fast-Set, notamment la mise au point d'une nouvelle configuration à trois tubes, qui permet un déploiement rapide des hameçons tout en limitant l'accès des oiseaux marins près de la surface. Le GTCA13 a noté que ce système modernisé est peu coûteux, renforce la sécurité des équipages et permet de réduire les captures accessoires d'oiseaux marins tout en améliorant l'efficacité de la pêche, ce qui constitue une avancée majeure pour cette pêche artisanale.

Le document **SBWG13 Doc 07 Rev 1** a rendu compte de la poursuite de l'élaboration d'une « boîte à outils » de mesures d'atténuation destinées à la pêche artisanale et à petite échelle. Le GTCA13 a pris note des informations actualisées concernant les techniques d'atténuation applicables à la pêche artisanale et à petite échelle. La classification des mesures d'atténuation en fonction de leur efficacité a fait l'objet de nombreuses discussions. Le GTCA13 a conclu que, afin de faciliter la diffusion des recommandations, il convenait de réduire la classification aux seules mesures d'atténuation dont l'efficacité à réduire les captures accessoires d'albatros et de pétrels a été prouvée, et à celles pour lesquelles ce n'est pas le cas. Il a également été convenu que la boîte à outils ne devrait décrire que brièvement les méthodes dont l'efficacité pour réduire les captures accessoires d'albatros et de pétrels n'a pas été prouvée. Le format mis à jour est présenté à **l'ANNEXE 9**.

Le GTCA13 a examiné la nécessité d'établir une définition de la pêche artisanale et à petite échelle et s'est référé à la définition de la FAO. Le GTCA a reconnu que, bien qu'une définition soit importante dans le contexte local, l'ACAP devait prendre en compte les aspects spécifiques et les nuances propres à chaque pêcherie pour résoudre les problèmes d'interactions avec les oiseaux marins ; il a donc conclu qu'une définition n'était pas nécessaire pour poursuivre ces travaux. Les membres ont été encouragés à présenter un document lors de la réunion CC16 afin de proposer des solutions.

8.2 Priorités en matière de recherches sur l'atténuation

Comme l'a souligné le GTCA12, les priorités en matière de recherche peuvent être déduites des descriptions des méthodes d'atténuation présentées dans la boîte à outils. La pêche au mahi-mahi avait été identifiée comme une pêcherie nécessitant davantage de recherches sur les mesures d'atténuation des captures accessoires d'oiseaux marins.

RECOMMANDATIONS AU COMITÉ CONSULTATIF

Le GTCA recommande que le Comité consultatif :

13. Approuve les recommandations actualisées de l'ACAP en matière d'atténuation pour la pêche artisanale et à petite échelle figurant à **l'ANNEXE 9**, en notant que la mise au point finale du texte sera effectuée entre les sessions.
14. Exhorte les Parties ayant compétence sur les pêcheries artisanales et à petite échelle pratiquant la pêche à la palangre concernées à continuer à élaborer et à mettre en œuvre des mesures d'atténuation visant à réduire le risque de captures accessoires.

9. ATTÉNUATION DES CAPTURES ACCESSOIRES D'OISEAUX MARINS DANS LES PÊCHERIES À LA SENNE COULISSANTE

9.1 Examen des évolutions récentes en matière de recherche sur l'atténuation et mise à jour des conseils de la boîte à outils

Le document **SBWG13 Doc 08** a rendu compte de l'avancement des travaux visant à mettre au point une boîte à outils contenant des recommandations pour la réduction des captures accessoires d'oiseaux marins dans les pêcheries à la senne coulissante. Ce document constitue une ressource pratique permettant de présenter la faisabilité des mesures d'atténuation des captures accessoires d'oiseaux marins spécifiques à la pêche à la senne coulissante ; il synthétise les mesures d'atténuation identifiées dès 2017 (SBWG8 Inf 26), notamment les dispositifs de dissuasion sensoriels et physiques, ainsi que les modifications structurelles apportées aux engins de pêche à la senne coulissante. Le document **SBWG13 Doc 08** a souligné que certaines de ces mesures sont complétées par des bonnes pratiques concernant la prise de décision par les membres d'équipage occupant des postes clés sur la passerelle et le pont, notamment le fait de ne pas utiliser d'eaux usées (par exemple, de l'eau ou de l'huile de poisson) lors de l'arrosage.

Le GTCA13 a convenu que les recommandations de l'ACAP devaient être détaillées pour les mesures de la boîte à outils dont l'efficacité dans la réduction des captures accessoires d'oiseaux marins est avérée, tandis que celles pour lesquelles il n'existe pas de preuves d'une réduction des captures accessoires devraient être mentionnées, mais uniquement de manière succincte. En conséquence, ces deux catégories d'efficacité des mesures d'atténuation ont été retenues pour les recommandations relatives à la boîte à outils sur la pêche à la senne coulissante. Cela permet d'assurer une communication claire sur l'efficacité des mesures visant à réduire les captures accessoires d'albatros et de pétrels.

9.2 Priorités en matière de recherches sur l'atténuation

Aucune nouvelle priorité de recherche en matière d'atténuation n'a été identifiée. Les priorités de recherche peuvent être déduites de la catégorisation des méthodes décrites dans la boîte à outils pour l'atténuation des captures accessoires d'oiseaux marins pour les pêcheries à la senne coulissante.

RECOMMANDATIONS AU COMITÉ CONSULTATIF

Le GTCA recommande que le Comité consultatif :

15. Approuve la structure et le contenu actualisé de la boîte à outils contenant des recommandations visant à réduire les captures accessoires d'oiseaux marins dans les pêcheries à la senne coulissante, figurant à l'**ANNEXE 10**, en notant que la mise au point finale du texte sera effectuée entre les sessions.
16. Encourage les responsables des pêcheries à la senne coulissante à adopter les recommandations de la boîte à outils en tant que ressource conviviale et informative destinée aux décideurs.

10. ATTÉNUATION DES CAPTURES ACCESSOIRES D'OISEAUX MARINS DANS D'AUTRES PÊCHERIES

10.1 Examen des développements récents dans le domaine de la recherche sur l'atténuation et réflexion sur les priorités pour la poursuite de la recherche

Le document **SBWG13 Inf 10** a décrit un volet du projet argentin d'amélioration de la pêche au calmar, dans le cadre duquel 15 observateurs de l'INIDEP ont recensé la présence et les interactions des oiseaux marins et de la mégafaune marine au cours de 22 sorties à bord de 14 navires de pêche au calmar à la turlutte entre janvier et juin 2025 ; *Thalassarche melanophris* (46,2 %) et *Macronectes giganteus* (35,6 %) étant les espèces prédominantes observées auprès de la flotte. Des interactions directes avec des navires n'ont été enregistrées qu'à 20 reprises (2 % des observations), l'impact global sur les oiseaux marins ayant été jugé mineur ou négligeable.

La discussion a confirmé que tant la présence que les interactions étaient dominées par *Thalassarche melanophris* et *Macronectes giganteus*. Le GTCA13 a souligné l'intérêt de ces données, car pour certaines pêcheries de calmar à la turlutte (par exemple celles gérées par la SPRFMO), on ne dispose que d'hypothèses quant au niveau d'interaction avec les oiseaux marins. Il a également été signalé que les discussions informelles menées avec les observateurs n'avaient révélé aucun indice de capture délibérée d'oiseaux marins dans le cadre de cette pêcherie argentine.

Le document **SBWG13 Inf 11** a présenté les données d'observation issues de 4 963 traits réalisés au cours de trois campagnes de pêche commerciale au crabe royal (*Lithodes santolla*)

(2022–2024) dans la zone de gestion centrale de l'Atlantique sud-ouest argentin, données recueillies dans le cadre du processus de certification MSC en cours. Une vingtaine d'espèces d'oiseaux marins, principalement des *Procellariiformes*, ont été observées en présence de la flotte, mais les taux d'interaction avec la pêche au casier étaient extrêmement faibles (0,06 à 0,12 % des traits) et aucune mortalité accidentelle d'oiseaux marins n'a été enregistrée, quelle que soit la saison.

Le GTCA13 a confirmé qu'il existe peu, voire aucune donnée faisant état d'interactions entre les espèces inscrites à l'ACAP et les engins de pêche de type piège, mais on sait que ces engins ont capturé des espèces de la famille des *Phalacrocoracidae* (cormorans et cormorans huppés).

10.2 Examen de l'évaluation des risques et de l'élaboration de conseils de l'ACAP à destination de toute autre pêcherie concernée

Aucun document n'a été examiné au titre de ce point de l'ordre du jour et aucune autre pêcherie n'a été identifiée en vue de l'élaboration de conseils de l'ACAP.

11. FAO IPOA/NPOA-SEABIRDS

11.1 Examen de l'état d'avancement de la mise en œuvre du NPOA-Seabirds

Deux documents d'information ont été examinés.

Le document **SBWG13 Inf 12** a rendu compte des progrès réalisés dans le cadre du Plan d'action régional Argentine–Uruguay visant à réduire les interactions entre les oiseaux marins et les activités de pêche dans la zone couverte par le Traité du Río de la Plata et son front maritime (PAR AM).

Le GTCA13 a pris acte de la collaboration fructueuse entre l'Argentine et l'Uruguay ainsi que des progrès importants réalisés dans la mise en œuvre du PAR AM avec le soutien de la CTMFM ; il a également pris acte de la présence d'espèces inscrites à l'ACAP dans la zone du Front maritime commun.

Le document **SBWG13 Inf 13** a rendu compte de la deuxième version du Plan d'action national sud-africain pour la conservation et la gestion des oiseaux de mer (NPOA-Seabirds II). Conformément aux lignes directrices de la FAO en matière de bonnes pratiques, ce plan concerne l'ensemble des pêcheries sud-africaines et vise à renforcer et à moderniser les pratiques de surveillance afin de prendre en compte les effets de la pêche sur l'ensemble des oiseaux marins, ainsi qu'à mettre en œuvre des mesures d'atténuation efficaces, conformément à la vision du plan.

Le GTCA13 a félicité l'Afrique du Sud pour les progrès accomplis et l'intégration de nouvelles pêcheries dans le deuxième NPOA-Seabirds ; il a également salué l'approche collaborative adoptée par l'Argentine et l'Uruguay, encourageant la mise en place d'initiatives similaires entre la Namibie et l'Afrique du Sud.

12. ACTIONS PRIORITAIRES DE CONSERVATION EN MER

12.1 Bilan des progrès réalisés concernant les mises à jour relatives aux pêcheries prioritaires

Aucun document n'a été présenté concernant ce point de l'ordre du jour.

Le Co-Président a présenté les pêcheries prioritaires actuelles décrites dans le document RdP8 Doc 15. Le GTCA13 a poursuivi ses délibérations sur la manière de réexaminer et de mettre à jour la liste des pêcheries prioritaires, les espèces concernées et les actions prioritaires pour l'ACAP, les Parties ou d'autres acteurs. Le Secrétariat a présenté les travaux visant à intégrer les rapports sur les mesures prises concernant les pêcheries prioritaires dans le processus national de communication de rapports au CC et dans la base de données de l'ACAP, afin de garantir un cadre de rapport plus régulier et plus intégré. Une fois pleinement mise en œuvre, cette mesure permettrait aux Parties de rendre compte de manière fiable des progrès accomplis à la RdP. Comme indiqué dans le programme de travail du Comité consultatif (tâche 3.10), un processus d'examen par étapes serait mis en place : les Parties procéderaient à l'examen des pêcheries nationales avant le CC16, tandis qu'un contrat spécifique ou un détachement serait prévu pour examiner les pêcheries relevant des organisations régionales de gestion des pêches (ORGP) et d'autres pêcheries ne relevant pas des Parties.

Le GTCA13 a évoqué l'importance d'exploiter la multitude de données de suivi pour identifier les pêcheries prioritaires. Toutefois, l'intégration des données de suivi dans la hiérarchisation des pêcheries n'est pas une tâche aisée, et il convient d'examiner plus en détail quelle serait la meilleure approche, en se concentrant éventuellement dans un premier temps sur les populations hautement prioritaires de l'ACAP. Ce point a été intégré en tant que mise à jour recommandée au programme de travail du Comité consultatif.

13. AMÉLIORATION DE LA MISE EN ŒUVRE DES MESURES D'ATTÉNUATION DES CAPTURES ACCESSOIRES D'OISEAUX MARINS CONFORMES AUX BONNES PRATIQUES

Le document **SBWG13 Doc 22** a fait le point sur le développement de la boîte à outils pour une pêche sans danger pour les oiseaux marins (Seabird-Safe Fishing Toolkit), une ressource en ligne conçue pour fournir aux entreprises de produits de la mer les moyens de pratiquer une pêche sans danger pour les oiseaux marins, en s'appuyant sur les préoccupations des consommateurs de produits de la mer en matière de développement durable. Dans le cadre de cette boîte à outils, la pêche respectueuse des oiseaux marins est définie comme l'utilisation et le suivi de pratiques efficaces visant à éviter les captures d'oiseaux marins.

Cette boîte à outils est destinée aux grands navires de pêche à la palangre pélagique (> 24 mètres) opérant dans n'importe quel océan, mais elle pourrait être étendue à d'autres engins de pêche et à d'autres espèces de mégafaune. Elle a été élaborée conjointement par le Southern Seabirds Trust et le Département de la conservation de la Nouvelle-Zélande (NZ DOC), en collaboration avec le groupe de travail sur les océans et la pêche de la Coopération économique Asie-Pacifique (APEC).

Cette boîte à outils s'appuie sur les meilleures données scientifiques disponibles et se veut une source d'information unique et fiable que les entreprises du secteur du thon peuvent utiliser pour déterminer le niveau de risque lié à leur zone de pêche, les mesures d'atténuation appropriées pour réduire ce risque, ainsi que les approches disponibles pour contrôler le respect des règles. Elle comprend trois outils :

i. Un outil interactif de sécurité des oiseaux marins (Seabird Safety Tool) permettant à une entreprise de pêche d'évaluer le niveau de sécurité de ses opérations pour les oiseaux marins, en fonction des zones de pêche de ses navires et des pratiques utilisées ;

ii. Un outil interactif de cartographie des oiseaux marins (Seabird Mapping Tool) qui classe les océans du monde en zones en fonction de la répartition des oiseaux marins menacés et du risque d'extinction. Des espèces d'oiseaux marins individuelles ou des combinaisons d'espèces peuvent également être sélectionnées. Il a été précisé que, par souci de simplicité, les cartes de répartition sont établies sur une base annuelle et non saisonnière. Ces cartes peuvent être utilisées par les entreprises de pêche et d'autres acteurs de la filière du thon pour évaluer le risque lié aux oiseaux marins dans différentes zones de pêche au thon, ce qui suscite un vif intérêt chez les pêcheurs ; et

iii. Des informations pratiques détaillées décrivant des mesures éprouvées de protection des oiseaux marins et des méthodes de suivi applicables à la classe de navires ciblée par la boîte à outils. Des informations sur les coûts et sur l’impact sur les captures cibles sont également incluses lorsqu’elles sont disponibles.

La promotion de la boîte à outils a été approuvée par le CC14, et elle est présentée comme une ressource d'atténuation des captures accessoires co-marquée sur le site Web de l'ACAP. À la suite du lancement officiel de la boîte à outils le 20 novembre 2025, celle-ci a suscité un vif intérêt de la part des entreprises, des organisations et des administrations de l’ensemble de la chaîne d’approvisionnement du thon.

La boîte à outils est disponible au format PDF pour faciliter sa consultation hors ligne, notamment par les équipages des navires de pêche, tandis que l'application interactive s'adresse à d'autres acteurs de la chaîne d'approvisionnement, en particulier les détaillants. Elle est également disponible en quatre langues (anglais, japonais, chinois traditionnel et chinois simplifié). Les développements futurs porteront notamment sur la mise au point d'un mécanisme permettant d'évaluer le nombre d'oiseaux pouvant être sauvés grâce à des mesures d'atténuation, ainsi que sur les avantages économiques liés à la prévention des captures accessoires.

Le GTCA13 a pris note de la forte implication des acteurs du secteur, notamment des grandes entreprises thonières et des flottes d’Asie de l’Est ; de l’utilité des outils simplifiés destinés à un public non spécialisé ; du potentiel d’intégration avec des plateformes telles que Global Fishing Watch ; et des travaux en cours visant à traduire les performances en matière d’atténuation en résultats biologiques (par exemple, le nombre d’oiseaux sauvés) afin d’améliorer la communication avec les acteurs de la chaîne d’approvisionnement.

Le GTCA13 a salué cette initiative et a reconnu son intérêt en tant que mécanisme concret et très efficace pour promouvoir et diffuser les conseils de bonnes pratiques en matière d'atténuation, soulignant qu'elle pourrait constituer une ressource très utile pour les organismes de certification MSC afin d'évaluer si les pêcheries candidates sont sans danger pour les oiseaux marins et de déterminer les mesures à prendre si ce n'est pas le cas. Le GTCA a décidé de créer un groupe de contact d'experts chargé de transmettre en continu les conseils du GTCA aux concepteurs du contenu de la boîte à outils Seabird Safe Toolkit concernant les mises à jour ou les évolutions des mesures d'atténuation et des Conseils de bonnes pratiques de l'ACAP visant à réduire l'impact de la pêche sur les oiseaux marins. Le GTCA a également recommandé de poursuivre le partenariat avec le Southern Seabirds Trust et le DOC néo-zélandais afin de continuer à développer la boîte à outils et d'étudier comment celle-ci pourrait être utilisée au mieux dans le cadre de la Stratégie de communication de l'ACAP, notamment comme moyen de diffusion d'informations sur la répartition spatiale des espèces et les risques de captures accessoires liés à la pêche.

Le document **SBWG13 Doc 23** a examiné les obligations de déclaration des navires exploités dans le cadre de contrats d'affrètement. Ce projet a été mené dans le cadre d'une collaboration entre BirdLife International, le ministère namibien de l'Agriculture, de la Pêche, de l'Eau et de la Réforme agraire (MFAWLR) et la Fondation namibienne pour la nature (NNF). En s'appuyant sur une étude de cas portant sur la pêche namibienne des grands pélagiques, qui cible les requins, les thons et les espèces associées dans l'Atlantique Sud, l'étude a mis en évidence que les accords d'affrètement peuvent brouiller les responsabilités en matière de déclaration des captures accessoires et de respect des mesures d'atténuation ; le pays affréteur est chargé de déclarer les captures et les captures accessoires, mais la responsabilité de la mise en œuvre peut être partagée avec l'État du pavillon ; des lacunes importantes peuvent exister dans la déclaration des captures accessoires (y compris les oiseaux marins) au sein de certaines flottes ; et l'affrètement offre des opportunités d'améliorer la couverture des observateurs et la collecte de données.

Le GTCA13 a salué ce travail novateur et a souligné la complexité et le manque de transparence des accords d'affrètement au sein des ORGP. L'un des objectifs de la Stratégie d'interaction de l'ACAP avec les ORGP consiste à renforcer la mise en œuvre, par ces dernières, de mesures garantissant l'application et le suivi efficaces des opérations de pêche afin de prévenir, de minimiser ou de réduire les captures accessoires d'oiseaux marins. Par conséquent, l'importance d'approfondir les recherches sur cette question encore peu étudiée pour la conservation des oiseaux marins a été soulignée, et il a été convenu de mener une étude transversale, à l'échelle des ORGP, des accords d'affrètement et des modalités d'accès afin d'améliorer la compréhension et les rapports.

Le GTCA a également examiné deux documents d'information, à savoir **SBWG13 Inf 14** et **SBWG13 Inf 15**. Ces deux documents portaient sur les dynamiques socio-environnementales liées aux captures accessoires et ont mis en évidence l'importance d'intégrer des perspectives multiples, des systèmes de connaissances, des dimensions émotionnelles et des contextes opérationnels afin de faire progresser les stratégies de conservation et la gestion durable de la pêche. Le GTCA a souligné l'importance d'intégrer des aspects des sciences sociales tels que ceux-ci lors de l'élaboration des stratégies et des ressources de communication de l'ACAP.

Le GTCA13 a également estimé qu'il serait utile que des documents traitant des processus de certification soient présentés lors des prochaines réunions, notamment compte tenu de la mise en œuvre prochaine d'une nouvelle version des normes de certification du Marine Stewardship Council.

RECOMMANDATIONS AU COMITÉ CONSULTATIF

Le GTCA recommande que le Comité consultatif :

17. Appuie la création d'un groupe d'experts intersessionnel chargé de fournir en continu des conseils sur l'atténuation des captures accessoires d'oiseaux marins aux responsables de l'élaboration du contenu de la boîte à outils Seabird Safe Toolkit
18. Examine les moyens permettant à l'ACAP d'utiliser ou de diffuser plus activement la boîte à outils Seabird Safe Toolkit afin de promouvoir les conseils de bonnes pratiques en matière d'atténuation.
19. Approuve un partenariat continu avec le Southern Seabirds Trust et le Département de la conservation pour le développement ultérieur de la boîte à outils, et examine comment celle-ci peut être utilisée au mieux dans le cadre de la Stratégie de communication de l'ACAP, notamment comme mécanisme de communication d'informations sur la répartition spatiale des espèces et le risque de captures accessoires.
20. Approuve l'intégration, dans le programme de travail du Comité consultatif, d'un examen transversal, à l'échelle des ORGP, des accords d'affrètement et autres accords d'accès.
21. Exhorte les Parties à œuvrer à l'amélioration de la transparence des contrats d'affrètement et des accords d'accès au sein des ORGP.
22. Exhorte les Parties à s'engager à mettre en place une surveillance à 100 %, en combinant la présence d'observateurs et des systèmes de surveillance électronique à bord des navires de pêche en eaux lointaines opérant dans le cadre de contrats d'affrètement et d'accords d'accès, afin d'améliorer la collecte de données et la transmission de ces informations aux organisations régionales de gestion des pêches (ORGP).

14. INDICATEURS DE PERFORMANCE DE L'ACAP CONCERNANT LES CAPTURES ACCESSOIRES D'OISEAUX MARINS

Le document **SBWG13 Doc 11 Rev 1** a présenté l'état d'avancement des travaux relatifs à l'élaboration des indicateurs de performance révisés de l'ACAP concernant les captures accessoires d'oiseaux marins et des procédures de rapport associées. Ce document a proposé un cadre simplifié afin de remédier au manque de données communiquées par les Parties et aux difficultés rencontrées dans la mise en œuvre du système d'indicateurs précédent, qui exigeait davantage de données.

Le GTCA13 a examiné les indicateurs de réponse révisés, axés sur la mise en œuvre des mesures d'atténuation, l'interaction des Parties avec les ORGP et l'innovation continue en matière d'atténuation. Le GTCA a examiné un cadre de rapport simplifié, structuré par type d'engin et par mesure d'atténuation, y compris celles recommandées dans les conseils de bonnes pratiques de l'ACAP. Ce cadre a été conçu pour améliorer la souplesse des rapports, notamment lorsque les données de suivi sont limitées. Les analyses préliminaires de ces indicateurs, réalisées à partir des rapports actuellement disponibles dans la base de données de l'ACAP, ont montré que les données communiquées se limitaient encore largement à la pêche industrielle. Ces résultats préliminaires ont montré que de nombreuses Parties ne mettaient pas en œuvre les conseils de bonnes pratiques de l'ACAP dans leurs pêcheries, et le GTCA a estimé que cela ne témoignait pas d'un esprit de leadership au sein des ORGP.

Les membres ont salué cette approche simplifiée et l'ont considérée comme une solution concrète pour améliorer les rapports et la participation. Le GTCA13 a examiné l'importance de faire la distinction entre les mesures d'atténuation prescrites et celles qui ont été mises en œuvre, d'améliorer la clarté des exigences en matière de rapports et de mettre en place des mécanismes permettant de recueillir des retours d'expérience et d'affiner le processus de rapport. Le GTCA a convenu que le groupe intersessionnel devrait affiner davantage le cadre de rapport avant la présentation des rapports nationaux au CC16.

RECOMMANDATIONS AU COMITÉ CONSULTATIF

Le GTCA recommande que le Comité consultatif :

23. Approuve les indicateurs affinés de réponse aux captures accessoires d'oiseaux marins présentés dans le document **SBWG13 Doc 11 Rev 1**.
24. Exhorte les Parties à rendre compte de la mise en œuvre des mesures d'atténuation des captures accessoires d'oiseaux marins dans les pêcheries relevant de leur juridiction avant le CC16.
25. Exhorte les Parties à rendre compte des mesures identifiées dans la Stratégie d'interaction de l'ACAP avec les ORGP avant le CC16.

15. TECHNIQUES DE SUIVI DES CAPTURES ACCESSOIRES D'OISEAUX MARINS ET DE L'UTILISATION DES MESURES D'ATTÉNUATION

Le document **SBWG13 Doc 09** a présenté la version mise à jour des lignes directrices de l'ACAP relatives à la collecte de données pour les programmes d'observateurs. Ce document actualise les données qu'il est recommandé de collecter dans les pêcheries à la palangre et au chalut, identifie les champs de données prioritaires essentiels à l'évaluation des captures accessoires d'oiseaux marins et élargit le champ d'application des lignes directrices afin d'y inclure les pêcheries à la senne coulissante. Le GTCA s'est félicité des améliorations apportées, mais a souligné que d'autres modifications étaient nécessaires, notamment en ce qui concerne les codes d'espèces et les catégories de mesures d'atténuation. Il a été convenu que ces lignes directrices, ainsi que celles relatives à la surveillance électronique, seraient affinées et présentées lors de la réunion GTCA14/CC16. Il a également été relevé que la mortalité cryptique reste un problème pour les observateurs et qu'elle est difficile à quantifier dans les pêcheries au chalut au Chili, en Nouvelle-Zélande et ailleurs.

Le document **SBWG13 Inf 03**, qui a également été présenté au titre du point 5.1 de l'ordre du jour, a passé en revue les protocoles de collecte de données de la Nouvelle-Zélande visant à évaluer l'efficacité des mesures d'atténuation. Il a été conclu que les champs de données traditionnels étaient insuffisants ; c'est pourquoi la Nouvelle-Zélande élabore actuellement de nouveaux protocoles.

Le document **SBWG13 Inf 16** a présenté en détail les premiers résultats d'une collaboration avec le CSIRO (Australie) visant à utiliser l'intelligence artificielle sur des images de surveillance électronique (EM) pour évaluer l'utilisation des lignes d'effarouchement des oiseaux (BSL) sur les chalutiers argentins. Avec un petit nombre d'images, l'utilisation des BSL a été identifiée avec un taux de réussite de 31,1 %, qui est passé à 78,6 % après l'entraînement du modèle. On espère qu'avec davantage d'images, il sera possible d'atteindre une précision supérieure à 90 %. Des résultats erronés apparaissaient souvent lorsque les images étaient de mauvaise qualité ou lorsque les conditions météorologiques ou d'éclairage étaient défavorables. Il a été suggéré que la couleur et la luminosité des banderoles pourraient influencer la capacité des modèles à détecter avec précision les BSL.

Le document **SBWG13 Inf 17** a présenté une nouvelle méthode d'identification des oiseaux marins capturés accessoirement, fondée sur la génétique. Ce document décrit en détail l'utilisation du marqueur « cytochrome oxydase I » (COI), qui permet d'identifier tous les taxons au niveau du genre et 75 % d'entre eux au niveau de l'espèce. En ce qui concerne les sous-espèces, aucun des marqueurs ne s'est révélé adapté pour identifier les échantillons avec une résolution taxonomique suffisante. Il a été noté que l'Australie a mis au point des tests ADN présentant un taux de réussite élevé pour distinguer *Thalassarche cauta* de *T. steadi*. Il a également été souligné que la Nouvelle-Zélande était en train de mettre en place un contrat commercial pour le traitement par lots des échantillons, afin d'optimiser les coûts et l'efficacité. Le GTCA13 a fait remarquer qu'il serait utile que les résultats de ces études alimentent les travaux du groupe de travail sur la taxonomie (TWG) de l'ACAP.

Birdlife International a également fait état d'une collaboration avec la société FCF Company Ltd, basée à Taïwan, et le professeur Ting-Chun Kuo, de l'Université nationale océanographique de Taïwan, dans le cadre d'un projet visant à réduire l'impact des activités de pêche sur les captures accessoires et les espèces en danger, menacées et protégées (ETP). L'objectif principal de cette collaboration est d'étudier les améliorations pratiques à apporter au système de surveillance électronique afin d'accroître la précision des données et de renforcer les capacités de surveillance concernant les espèces ETP et les espèces capturées accessoirement. Ce projet vise à affiner les méthodes de collecte de données, à renforcer les capacités d'identification des captures, à améliorer l'accès des parties prenantes aux informations relatives aux mesures d'atténuation adoptées et à garantir le respect des normes des ORGP. Ces améliorations visent à renforcer la disponibilité des données probantes et des données justificatives pour les navires relevant des programmes d'amélioration de la pêche (FIP) et souhaitant obtenir la certification MSC, notamment en ce qui concerne les interactions avec les espèces ETP et les espèces capturées accessoirement.

RECOMMANDATIONS AU COMITÉ CONSULTATIF

Le GTCA recommande que le Comité consultatif :

26. Prenne note qu'un travail intersessionnel se poursuivra afin de mettre à jour et d'affiner les lignes directrices de l'ACAP relatives à la collecte de données pour les programmes d'observateurs ainsi que les lignes directrices sur les systèmes de surveillance électronique des pêches.

16. OUTILS ET LIGNES DIRECTRICES

16.1 Mises à jour et nouvelles lignes directrices

Aucun document n'a été déposé au titre de ce point de l'ordre du jour.

16.2 Fiches pratiques sur l'atténuation

Le GTCA a constaté que peu de progrès avaient été réalisés depuis la 12e réunion du GTCA (GTCA12) en ce qui concerne la mise à jour des fiches pratiques existantes sur l'atténuation ou l'élaboration de nouvelles fiches. BirdLife International a proposé son aide pour mettre à jour les fiches pratiques prioritaires afin de les adapter au nouveau format simplifié, avec le concours de l'ATF Chili, du MRAG et de l'Afrique du Sud ; le texte révisé sera soumis au GTCA14 pour examen et approbation. Il a été convenu d'élaborer des fiches pratiques distinctes pour la prévention des enchevêtrements dans les chaluts et dans les sennes coulissantes ; toutefois, une seule fiche pratique est nécessaire pour la prise en charge et la libération en toute sécurité des oiseaux enchevêtrés, car les pratiques sont similaires pour ces deux types d'engins de pêche. Le GTCA a par ailleurs convenu que les fiches pratiques devaient continuer à porter la double marque de l'ACAP et de BirdLife, car cela contribuera à renforcer la portée globale de ces documents.

RECOMMANDATIONS AU COMITÉ CONSULTATIF

Le GTCA recommande que le Comité consultatif :

27. Alloue des ressources suffisantes pour adapter les fiches pratiques sur l'atténuation au nouveau format simplifié, selon une approche progressive, conformément aux priorités définies lors de la 12e réunion du GTCA.

17. EXAMEN DES RECOMMANDATIONS ISSUES DES PRÉCÉDENTES RÉUNIONS DU GTCA

Le Secrétariat a rassemblé les recommandations issues des précédentes réunions du GTCA dans une base de données consultable, qui permet de suivre l'évolution de ces recommandations au fil du temps afin d'éviter les doublons et de rendre compte des progrès réalisés par rapport aux mesures convenues. Une fois que les Présidents du GTCA auront examiné et peaufiné la liste des recommandations, ce document sera mis à disposition avant la réunion GTCA14 afin que les membres du GTCA et les auteurs puissent vérifier l'état d'avancement des recommandations existantes avant de rédiger les documents de la réunion.

18. PRIORITÉS DE FINANCEMENT POUR 2026–2028

Les travaux prioritaires du GTCA nécessitant un financement au cours de cette période triennale ont été identifiés dans le programme de travail examiné au titre du point 19 de l'ordre du jour.

19. PROGRAMME DE TRAVAIL DU GTCA

16.1 Révision du programme de travail 2026–2028

Les tâches pertinentes pour le Groupe de travail sur les captures accessoires d'oiseaux marins détaillées dans le Programme de travail 2026–2028 du Comité consultatif approuvé par la RdP8 (**CC15 Doc 24**) ont été examinées à la suite des discussions du GTCA13. Une version actualisée du Programme de travail a été préparée pour examen par le Comité consultatif.

20. QUESTIONS DIVERSES

Le GTCA13 a présenté ses condoléances à la suite du triste décès de Don Andres Rivera, co-créateur du système NISURI Fast-Set. Le GTCA13 a salué son importante contribution à la conservation des oiseaux marins.

21. RAPPORT AU CC15

Ce rapport a été préparé pour examen par le Comité consultatif.

22. REMARQUES FINALES

Le Co-Président Sebastián Jiménez a remercié les auteurs des documents soumis à examen, ainsi que les Membres et les Observateurs pour leur précieuse contribution à la réunion. Le Co-Président a également remercié le Secrétariat de l'ACAP et l'équipe de soutien technique pour l'organisation et le déroulement de la réunion. Il a remercié les interprètes pour leurs précieux efforts au cours de la réunion, ainsi que le pays hôte, la Namibie, pour la qualité des lieux et des équipements mis à disposition pour la réunion.

ANNEXE 1. LISTE DES PARTICIPANTS À LA RÉUNION DU GTCA13

Membres du GTCA	
Igor Debski	SBWG Co-convenor, Department of Conservation, New Zealand
Sebastián Jiménez	SBWG Co-convenor, Dirección Nacional de Recursos Acuáticos, Uruguay
Dimas Gianuca	SBWG Co-viceconvenor, BirdLife International
Megan Tierney	Joint Nature Conservation Committee, United Kingdom
Luis Adasme	Instituto de Fomento Pesquero, Chile
Barry Baker	Charles Darwin University, Australia
Marco Favero	Instituto de Investigaciones Marinas y Costeras, CONICET, Argentina
Mandi Livesey	Department of Climate Change, Energy, the Environment and Water, Australian Antarctic Division
Azwianewi Makhado	Department of Forestry, Fisheries and the Environment, South Africa
Tatiana Neves	Projeto Albatroz, Brazil
Cristián Suazo	Albatross Task Force - Chile, BirdLife International
Mark Tasker	Joint Nature Conservation Committee, United Kingdom/ TWG Convenor

Experts invités	
Johannes Chambon	University of Otago
Thomas Clay	Environmental Defense Fund
James Moir Clark	MRAG

Membres du Comité consultatif, représentants et conseillers	
Pedro Albuquerque	Representative, Brazil
Gabriel Canani Sampaio	Advisor, Brazil
Thando Cebekhulu	Alternate Representative, South Africa
Lawrence Chlebeck	Advisor, Australia
Luis Cocas	Representative, Chile
Mike Double	AC Chair
Johannes Fischer	Alternate Representative, New Zealand
Elisa Goya	AC Member, Peru
Gustavo Jimenez	Advisor, Ecuador
Makhudu Masotla	Alternate Representative, South Africa
Helena Moreno Colera	Representative, Spain
Patricia Pereira Serafini	Advisor, Brazil/ PaCSWG Co-convenor
Richard Phillips	Advisor, United Kingdom/ PaCSWG Vice-convenor

Observateurs	
Andrea Angel	BirdLife International
Chris Bartholomae	Namibia
Sarah Becker	University of Colorado Bouler
Zoe Jacobs	BirdLife International
John Kathena	Namibia
Anja Kreiner	Namibia
Samantha Matjila	Namibia Nature Foundation
Elia Nambahu	Namibia Nature Foundation
Clemens Naomab	Namibia Nature Foundation
Daisuke Ochi	Japan
Sarah Paulus	Namibia
Etienne Rouby	INSTAAR, CU Boulder
Ndaendomwenyo Sheya	Namibia
Desmond Tom	Namibia
Lizette Voges	SEAFO
Oliver Yates	BirdLife International

Secrétariat de l'ACAP	
Jonathon Barrington	Executive Secretary
Wiesława Misiak	Science Officer

Interprètes
Cecilia Alal
Sandra Hale

Membres du GTCA ne participant pas à la réunion GTCA13

Joanna Alfaro-Shigueto	ProDelphinus, Peru
Cristóbal Anguita Luco	Universidad de Chile
Jose Carlos Báez	Instituto Español de Oceanografía (IEO), Spain
Nigel Brothers	Unaffiliated
Johannes De Goede	Department of Environment, Forestry and Fisheries, South Africa
Andrés Domingo	Dirección Nacional de Recursos Acuáticos (DINARA), Uruguay
Rodrigo Forselledo	Dirección Nacional de Recursos Acuáticos (DINARA), Uruguay
Caroline Fox	Environment and Climate Change Canada
Eric Gilman	Hawaii Pacific University, USA

Membres du GTCA ne participant pas à la réunion GTCA13

Sheryl Hamilton	Department of Natural Resources and Environment (Tasmania), Australia
Marco Herrera	Insituto Público de Investigaciones en Acuacultura y Pesca, Ecuador
Svein Løkkeborg	Institute of Marine Research, Norway
Amanda Kuepfer	Exeter University, United Kingdom
Jeffry Mangel	ProDelphinus, Peru
Alexandre Marques	Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis, Brazil
Ed Melvin	Emeritus, University of Washington, USA
Ken Morgan	Emeritus, Environment and Climate Change Canada
Gabriela Navarro	Subsecretaría de Pesca y Acuicultura, Argentina
Javier Quiñones	Instituto del Mar del Perú (IMARPE), Peru
Graham Robertson	Unaffiliated
Yann Rouxel	BirdLife International
Juan Pablo Seco Pon	SBWG Co-viceconvenor, Instituto de Investigaciones Marinas y Costeras, CONICET-UNMDP, Argentina
Barbara Wienecke	Department of Climate Change, Energy, the Environment and Water, Australian Antarctic Division
Anton Wolfaardt	Unaffiliated

ANNEXE 2. RÉSUMÉ DES CONSEILS DE BONNES PRATIQUES DE L'ACAP POUR LES PÊCHES AU CHALUT PÉLAGIQUE ET DÉMERSAL

Agreement on the Conservation of Albatrosses and Petrels

ACAP 2026 Summary Best Practice Advice for Reducing the Impact of Pelagic and Demersal Trawl Fisheries on Seabirds

Reviewed at the Fifteenth Meeting of the Advisory Committee
Swakopmund, Namibia, 1 – 5 June 2026

BEST PRACTICE MEASURES

Seabird mortality in trawl fisheries occurs when birds collide with cables as they feed on fish processing waste (offal) and discards or are entangled in trawl nets as they attempt to forage on captured fish or fish parts. Cable strikes, including collisions with net monitoring cables[1], warp cables[2] and paravanes are associated with the discards and fish waste discharged by vessels. It is recognized that larger seabirds (albatrosses and giant petrels) with long wingspans are most vulnerable to cable strike mortalities; however, smaller seabirds can also suffer cable strike mortalities. Although in many fisheries vessels are required to discard prohibited fish species whole and unprocessed, vessels that catch fish for delivery for shoreside processing (catcher vessels) and do not produce offal, are in general are less associated with cable strikes. Seabird net mortalities can occur in catcher-processor (vessels that catch and process fish on board) and catcher vessels trawl operations.

Trawl fisheries are extremely diverse and encompass pelagic trawling for schooling off-bottom species and demersal trawling for fish species on the sea floor. In general, trawl fisheries range from high volume fisheries that land and process hundreds of tonnes of fish 24 hours a day continuously for weeks, to lower volume fisheries that fish for shorter time periods producing little to no waste. Because fish waste drives cable strikes, and can attract birds that may then interact with the net, management of offal discharge and discards[3] is considered the primary means to reduce cable strikes and net entanglements. However, fishery and vessel characteristics dictate the extent to which offal can be managed and the method that might be employed. Where the opportunity for fish waste management is limited or impractical, cable strikes can be prevented by protecting trawl cables with mitigation devices. Birds can also be attracted to the net during hauling by fish in the net, creating risk of net entanglement. Net

[1] The net monitoring cable connects the echo-sounder or net-sounder on the headline of the trawl net to the vessel.

[2] The warp cables or trawl warps are the cables used to tow nets.

[3] Offal discharge refers to the disposal at sea of any fish waste resulting from processing, including heads, guts and frames. Fish discards refers to any unwanted whole fish (and or benthic material)

entanglements can be prevented by reducing the time the net is exposed on the surface of the water. The following measures have been shown to be effective at reducing seabird bycatch in trawl fisheries and are recommended as best practice measures:

Measures to reduce general attractiveness to seabirds

Management of offal and discards

In all cases, the discharge of offal and discards is the most important factor attracting seabirds to the stern of trawl vessels, where they are at risk of cable and net interactions. Managing offal discharge and discards while fishing gear is deployed has been shown to reduce seabird attendance of vessels and consequent risk of interactions and bycatch. The following offal and discard management measures, in order of their effectiveness in reducing bird attendance, are recommended:

1. **Retention of waste** – No discharge during fishing trips (full retention) should occur. When this is impracticable, no discharge should occur during fishing activity (when cables or net are in the water);
2. **Mealing waste** – Where retention of waste is impracticable, converting offal into fish meal, and retaining all waste material with any discharge restricted to liquid discharge / sump water;
3. **Batching waste** – Where meal production and retention of offal and discards are impracticable, waste should be stored temporarily for two hours or longer before strategically discharging it in batches;
4. **Mincing of waste** – Where retention, mealing or batching is impracticable, reduce waste to smaller particles (currently only recommended as a mitigation for bycatch of large *Diomedea* spp.).

Measures to reduce cable strikes

Where the opportunity for fish waste management is limited or impractical, cable strikes can be prevented by reducing the aerial extent of cables and deterring seabirds from interacting with them. The following measures are recommended:

Warp cables

1. Deploy bird scaring lines (BSLs) while fishing to deter birds away from warp cables.

Net monitoring cables

Net monitoring cables should not be used (wireless systems can be used instead).

However, it is recognised that net monitoring cables continue to be used in a number of fisheries. Where the use of net monitoring cables use cannot be avoided, the following measures have been recognised to reduce the number of seabird strikes from these cables:

1. Bird scaring lines, specifically positioned to deter birds away from net monitoring cables while fishing; and

2. A snatch block at the stern of a vessel to draw the net monitoring cable close to the water and thus reduce its aerial extent.

3. Net monitoring cable curtain, which acts by reducing the aerial extent of the cable and creating a barrier of warm colour net material to enhance the detection of cables by birds, thereby reducing aerial and water strikes.

4. Net monitoring cable sock, consisting of a tube surrounding the cable which should be in contact with the surface of the sea and be of a colour and diameter sufficient to make it visible to birds. Note this method has only been shown effective in continuous krill trawl fisheries where the aerial extent of the cable is shorter than in traditional trawl.

Measures to reduce net entanglement

Recognising that even with management of offal and discards there may be risk of net entanglement, the following further measures are recommended:

1. Clean nets after every haul to remove entangled fish ("stickers") and benthic material to discourage bird attendance during gear shooting;

2. Minimise the time the net is on the water surface. Maintenance of winches and good deck practices minimises shooting and hauling times. During turns the net should be maintained at depth (e.g. 50-100 m) or, if required, bring the net to the surface with doors up (wing ends and net mouth closed); and

3. For pelagic trawl gear, apply net binding to large meshes in the wings (120–800 mm), together with a minimum of 400 kg weight incorporated into the net belly prior to setting.

Further measures include avoiding peak areas and periods of seabird foraging activity. It is important to note that there is no single solution to reduce or avoid incidental mortality of seabirds in trawl fisheries, and that the most effective approach is to use the measures listed above in combination. Net entanglements during the haul remain the most difficult interactions to prevent. The ACAP review of seabird bycatch mitigation measures for pelagic and demersal trawl fisheries is presented in the following section.

ACAP's Review of Seabird Bycatch Mitigation Measures for Pelagic and Demersal Trawl Fisheries provides further information on all of these methods, as well as other considerations.

MITIGATION MEASURES THAT ARE <u>NOT RECOMMENDED</u>

ACAP considers that the following measures lack scientific substantiation as technologies or procedures for reducing the impact of pelagic and demersal trawl fisheries on seabirds.

Warp scarers: Insufficient evidence to recommend as an effective measure at this time.

Bird bafflers: Insufficient evidence to recommend as an effective measure at this time.

Cones on warp cables: Insufficient evidence to recommend as an effective measure at this time.

Warp boom: Insufficient evidence to recommend as an effective measure at this time.

Warp deflector: Insufficient evidence to recommend as an effective measure at this time.

Minimise pooling area: Insufficient evidence to recommend as an effective measure at this time.

Reduced mesh size: Insufficient evidence to recommend as an effective measure at this time.

Net jackets: Unproven and not recommended as a mitigation method at this time.

Acoustic deterrents: Unproven and not recommended as a primary mitigation method at this time.

Net restrictor: Unproven and not recommended as a primary mitigation method at this time.

Lasers: High energy lasers are strongly discouraged due to ongoing concerns regarding safety to both humans and birds.

ANNEXE 3. EXAMEN PAR L'ACAP DES MESURES D'ATTÉNUATION DES CAPTURES ACCESSOIRES D'OISEAUX MARINS DANS LA PÊCHE AU CHALUT PÉLAGIQUE ET DÉMERSALE

Agreement on the Conservation of Albatrosses and Petrels

ACAP 2026 Review of Seabird Bycatch Mitigation Measures for Pelagic and Demersal Trawl Fisheries

Reviewed at the Fifteenth Meeting of the Advisory Committee
Swakopmund, Namibia, 1 – 5 June 2026

INTRODUCTION

The incidental mortality of seabirds in trawl fisheries continues to be a serious global concern, especially for threatened albatrosses and petrels. In trawl fisheries, birds foraging on discards or offal may be injured or killed on collision with net monitoring and warp cables, dragged underwater and drowned when their wings become entangled around the warp, or become entangled in nets during shooting and hauling.

There have been considerable efforts internationally to develop mitigation measures to avoid or minimise the risk of incidental catch of seabirds in trawl fisheries. Although the focus of efforts to mitigate seabird bycatch was initially directed at longline fisheries, trawl fleets have also now been shown to incidentally kill large numbers of seabirds. The FAO Best Practice Guidelines for IPOA/NPOA-Seabirds were amended in 2009 to include trawl fisheries in addition to longline fisheries (FAO 2009), demonstrating increased serious concern and awareness of seabird mortality in global trawl fisheries. Although most mitigation measures are broadly applicable, the application and specifications of some will vary with local methods and gear configurations. ACAP has comprehensively reviewed the scientific literature dealing with seabird bycatch mitigation in trawl fisheries (see review section below) and this document is a summary of the advice informed by the review.

A range of technical and operational mitigation methods have been designed or adapted for use in trawl fisheries. In all cases, the discharge of offal and discards is the most important factor attracting seabirds to the stern of trawl vessels, where they are at risk of cable and net interactions. Managing offal discharge and discards while fishing gear is deployed has been shown to reduce seabird attendance of vessels and consequent risk of interactions and bycatch. Even with management of offal and discards there may be risk of cable strikes and net entanglement. Other mitigation measures have been developed to address these risks. Apart from being technically effective at reducing seabird bycatch, mitigation methods should be easy and safe to implement, cost effective, enforceable and should not reduce catch rates of target species.

The feasibility, effectiveness and specifications of mitigation measures may vary by area, seabird assemblages, fishery, vessel size, and gear configuration. Some of the mitigation methods are well established and explicitly prescribed in trawl fisheries; however, additional measures are undergoing further testing and refinements.

The Seabird Bycatch Working Group (SBWG) of ACAP has comprehensively reviewed the scientific literature dealing with seabird bycatch mitigation in trawl fisheries. This document is a distillation of that review.

THE ACAP REVIEW PROCESS

At each of its meetings, the ACAP SBWG considers any new research or information pertaining to seabird bycatch mitigation in trawl fisheries. The following criteria are used by ACAP to guide the assessment process, and to determine whether a particular fishing technology or measure can be considered best practice to reduce the incidental mortality of albatrosses and petrels in fishing operations.

Best Practice Seabird Bycatch Mitigation Criteria and Definition

i. Individual fishing technologies and techniques should be selected from those shown by experimental research to significantly[4] reduce the rate of seabird incidental mortality[5] to the lowest achievable levels. Experimental research yields definitive results when performance of candidate mitigation technologies is compared to a control (no deterrent), or to status quo in the fishery. When testing relative performance of mitigation approaches, analysis of fishery observer data can be plagued with a myriad of confounding factors. Where a significant relationship is demonstrated between seabird behaviour and seabird mortality in a particular system or seabird assemblage, significant reductions in seabird behaviours, such as the rate of seabirds attacking baited hooks, can serve as a proxy for reduced seabird mortality. Ideally, where simultaneous use of fishing technologies and practices is recommended as best practice, research should demonstrate significantly improved performance of the combined measures.

ii. Fishing technologies and techniques, or a combination thereof, should have clear and proven specifications and minimum performance standards for their deployment and use. Examples would include: specific bird scaring line designs (lengths, streamer length and materials; etc.), number (one vs. two) and deployment specifications (such as aerial extent and timing of deployment); night fishing defined by the time between the end of nautical dusk and start of nautical dawn; and, line weighting configurations specifying mass and placement of weights or weighted sections.

iii. Fishing technologies and techniques should be demonstrated to be practical, cost effective and widely available. Commercial fishing operators are likely to select for seabird bycatch reduction measures and devices that meet these criteria including practical aspects concerning safe fishing practices at sea.

iv. Fishing technologies and techniques should, to the extent practicable, maintain catch rates of target species. This approach should increase the likelihood of acceptance and compliance by fishers.

v. Fishing technologies and techniques should, to the extent practicable, not increase the bycatch of other taxa. For example, measures that increase the likelihood of catching other protected species such as sea turtles, sharks and marine mammals, should not be considered best practice (or only so in exceptional circumstances).

vi. Minimum performance standards and methods of ensuring compliance should be provided for fishing technologies and techniques, and clearly specified in fishery regulations. Relatively simple methods to check compliance should include, but not be

[4] Any use of the word 'significant' in this document is meant in the statistical context.

[5] This may be determined by either a direct reduction in seabird mortality or by reduction in seabird attack rates, as a proxy.

limited to, port inspections of branch lines to determine compliance with branch line weighting, determination of the presence of davits (tori poles) to support bird scaring lines, and inspections of bird scaring lines for conformance with design requirements. Compliance monitoring and reporting should be a high priority for enforcement authorities.

On the basis of these criteria, the scientific evidence for the effectiveness of mitigation measures or fishing technologies/techniques in reducing seabird bycatch is assessed, and explicit information is provided on whether the measure is recommended as being effective, and thus considered best practice, or not. The ACAP review also provides notes and caveats for each measure, together with information on performance standards and further research needs. Following each meeting of ACAP's SBWG and Advisory Committee, this review document and ACAP's best practice advice is updated (if required). A summary of ACAP's current best practice advice for trawl fisheries is provided in the preceding section of this document.

SEABIRD BYCATCH MITIGATION FACT SHEETS

A series of seabird bycatch mitigation fact sheets have been developed by ACAP and BirdLife International to provide practical information, including illustrations, on seabird bycatch mitigation measures (https://www.acap.aq/bycatch-mitigation/bycatch-mitigation-fact-sheets) The sheets, which include information on the effectiveness of the specific measure, their limitations and strengths and best practice recommendations for their effective adoption, are linked to the ACAP review process, and are updated following ACAP reviews. Links to the available fact sheets are provided in the relevant sections below.

1. MITIGATION MEASURES TO REDUCE GENERAL ATTRACTIVENESS TO SEABIRDS

1.1 Management of offal and discards[6]

In all cases, the discharge of offal and discards is the most important factor attracting seabirds to the stern of trawl vessels, where they are at risk of cable and net interactions (Wienecke & Robertson 2002; Sullivan *et al.* 2006a; Favero *et al*. 2011).

Managing offal discharge and discards while fishing gear is in the water has been shown to reduce seabird attendance of vessels and consequent risk of interactions and bycatch. The following offal and discard management measures, in order of their effectiveness in reducing bird attendance, are recommended:

1. **Retention of waste** – No discharge during fishing trips (full retention) should occur. When this is impracticable, no discharge should occur during fishing activity (when cables or net are in the water);
2. **Mealing waste** – Where retention of waste is impracticable, converting offal into fish meal, and retaining all waste material with any discharge restricted to liquid discharge / sump water;

[6] Offal discharge refers to the disposal at sea of any fish waste resulting from processing, including heads, guts and frames. Fish discards refers to any unwanted whole fish (and or benthic material).

3. **Batching waste** – Where meal production and retention of offal and discards are impracticable, waste should be stored temporarily for two hours or longer before strategically discharging it in batches;
4. **Mincing of waste –** Where retention, mealing or batching is impracticable, reduce waste to smaller particles (currently only recommended as a mitigation for bycatch of large *Diomedea* spp.)

1.1.1 Retaining waste

ACAP advice

Proven and recommended as the most effect mitigation method for both pelagic and demersal trawl fisheries. No discharge during fishing trips (full retention) should occur. When this is impracticable, no discharge should occur during fishing activity (when cables or net are in the water).

Scientific evidence for effectiveness in trawl fisheries

Repeated studies have shown that in the absence of offal discharge / fish discards seabird interactions and mortality levels are negligible (Sullivan *et al*. 2006a; Watkins *et al*. 2008; Melvin *et al*. 2010; Abraham & Thompson 2009, Frade et al 2025, Villafáfila et al 2024). Storage of all fish discard and offal, either for processing or for controlled release when cables and net are not in the water, has resulted in significant reductions in the attendance of all groups of seabirds (Abraham *et al.* 2009).

Notes and Caveats

Retrofitting of fish waste storage tanks may not be a viable option for existing vessels due to associated space requirements (Munro 2005).

Minimum standards

Any discharge is restricted to times when cables and net are out of the water.

Need for combination

Should be used in combination with additional mitigation methods to mitigate interactions with cables (if birds are still attending the vessel) and net.

Implementation monitoring

On-board observers or electronic monitoring. Potential for at-sea surveillance (of discharge or bird attendance).

Research needs

None identified.

Mitigation Fact Sheet

https://www.acap.aq/en/resources/bycatch-mitigation/mitigation-fact-sheets/1627-fs-13-trawl-fisheries-warp-strike/file

1.1.2 Mealing waste

ACAP advice

Proven and recommended as a mitigation method for both pelagic and demersal trawl fisheries when retention of waste is impracticable.

Scientific evidence for effectiveness in trawl fisheries

Mealing resulted in significant reduction in the number of seabird species feeding behind vessels, relative to the discharge of unprocessed fish waste (Abraham *et al.* 2009; Wienecke & Robertson 2002; Favero *et al*. 2011) or minced waste (Melvin *et al.* 2010).

Notes and Caveats

Good evidence from a number of fisheries that fish meal processing and reducing discharge to sump water is highly effective in reducing seabird bycatch. Retrofitting of meal plants may not be a viable option for existing vessels due to associated space requirements (Munro 2005).

Minimum standards

Any discharge is restricted to liquid discharge / sump water.

Need for combination

Should be used in combination with additional mitigation methods to mitigate interactions with cables (if birds are still attending the vessel) and net.

Implementation monitoring

Port-based inspection of meal plants, on-board observers or electronic monitoring. Potential for at-sea surveillance (of discharge or bird attendance).

Research needs

Investigate through robust trialling the extent to which reduced seabird abundance affects seabird interaction rates.

Mitigation Fact Sheet

https://www.acap.aq/en/resources/bycatch-mitigation/mitigation-fact-sheets/1627-fs-13-trawl-fisheries-warp-strike/file

1.1.3 Batching waste

ACAP advice

Proven and recommended as a mitigation method for both pelagic and demersal trawl fisheries where meal production and retention of offal and discards are impracticable.

Scientific evidence for effectiveness in trawl fisheries

Batching (temporary storage and periodic, controlled and fast release of discards / discharge during trawling) has been trialled by several Parties (Jimenéz *et al.* 2022; Kuepfer *et al*. 2022;

Pierre *et al*. 2010; Pierre *et al*. 2012b). Results showed that batching can significantly reduce numbers of seabirds and associated bycatch risk, although adequate storage period and minimal duration of batching events are important.

Notes and Caveats

Effectiveness of batching relies on minimising the frequency of discharges and efficient (fast) dumping of batched material. Retrofitting of fish waste storage tanks may not be a viable option for existing vessels due to associated space requirements (Munro 2005).

Minimum standards

Recommended when full retention or mealing is not possible. Where feasible, batch waste for at least 2 hours, preferably 4 hours or longer.

Need for combination

Should be used in combination with additional mitigation methods to mitigate interactions with cables and net.

Implementation monitoring

Port-based inspection of fish waste storage and discharge system, on-board observers or electronic monitoring. Potential for at-sea surveillance (of discharge or bird attendance).

Research needs

Investigate through robust trialling the extent to which reduced seabird abundance affects seabird interaction rates.

Identify threshold where increased storage is compromised by increased batching (discharging) period required.

Mitigation Fact Sheet

https://www.acap.aq/en/resources/bycatch-mitigation/mitigation-fact-sheets/1627-fs-13-trawl-fisheries-warp-strike/file

1.1.4 Mincing of waste

ACAP advice

Insufficient evidence to recommend this as a primary mitigation measure to reduce general attractiveness to seabirds in pelagic and demersal trawl fisheries at this time, however it is recommended as a mitigation for bycatch of large *Diomedea* spp. where retention, mealing or batching is impracticable.

Scientific evidence for effectiveness in trawl fisheries

Mincing waste to maximum 25 mm significantly reduced the number of large albatrosses (*Diomedea* spp.) attending vessels but had no effect on other groups of seabirds (Abraham *et al*. 2009; Abraham 2010). Pierre *et al.* (2012a) showed that whilst reduced particle size (10-40 mm and 30-60 mm) reduced seabird attendance compared with untreated waste, the effect was lowest for small albatross species, and not significant for the 10-40 mm treatment.

Notes and Caveats

Bottom trawled material, such as rocks, may impact the feasibility of mincing.

Minimum standards

None established. Insufficient evidence to recommend this as a primary measure at present.

Need for combination

Should be used in combination with additional mitigation methods to mitigate interactions with cables and net.

Implementation monitoring

Port-based inspection of mincing systems, on-board observers or electronic monitoring. Potential for at-sea surveillance (of discharge or bird attendance).

Research needs

At present only demonstrated to be effective against large *Diomedea* spp. albatrosses. Efficacy with *Thalassarche* spp. albatrosses needs to be proven before measure can be recommended (Abraham *et al*. 2009).

2. MITIGATION MEASURES TO REDUCE CABLE STRIKES

2.1 Mitigation measures to reduce the aerial extent of cables

2.1.1 Snatch block

ACAP advice

Recommended as a mitigation measure to reduce the aerial extent of net monitoring cables, when their use cannot be avoided, in pelagic and demersal trawl fisheries.

Scientific evidence for effectiveness in trawl fisheries

A snatch block, placed on the stern of a vessel to draw the third-wire close to the water to reduce its aerial extent, reduced seabird strikes, although performance varied by vessel (Melvin *et al*. 2010).

Notes and Caveats

Melvin *et al.* (2010) were confident that third-wires can be pulled closer to the water or submerged at the stern to make this measure highly effective, but noted that, as third-wires are fragile and expensive, any snatch block-like system should aim to minimise cable wear. Recommended on the basis that reducing the aerial extent of monitoring cables should reduce the risk of seabird strikes with these cables.

Minimum standards

None established.

Need for combination

Should be combined with offal/discard management and BSL specifically positioned to deter birds away from net monitoring cables while fishing.

Implementation monitoring

Port-based inspection, on-board observer or electronic monitoring.

Research needs

Needs to be trialled in a range of fisheries and areas to further demonstrate efficacy. Development of technical specifications is also required.

2.2 Mitigation measures to deter birds away from cables

2.2.1 Bird Scaring Lines (BSL) to reduce interaction with warp and net monitoring cables

ACAP advice

Proven and recommended as a mitigation measure to deter birds away from warp cables, and net monitoring cables where their use cannot be avoided, for pelagic and demersal trawl fisheries.

Scientific evidence for effectiveness in trawl fisheries

Attachment of a bird scaring line (BSL) to both the port and starboard sides of a vessel, above and outside of the warp blocks, greatly reduces the access of birds to the danger zone where warps enter the water (Watkins *et al.* 2006; Reid & Edwards 2005; Melvin *et al*. 2010, Tamini *et al.* 2015). An off-setting towed device has been demonstrated to improve BSL performance (Tamini *et al.* 2015).

Notes and Caveats

Effectiveness is reduced in strong cross winds and rough seas, when BSLs are deflected away from warps (Sullivan & Reid 2003; Crofts 2006a, 2006b). This can be alleviated in part by towing a buoy or cone attached to the end of lines to create tension and keep lines straight (Sullivan *et al*. 2006a; Cleal *et al.* 2013). Hard wearing and non-tangling materials and design can improve performance (Cleal *et al.* 2013), including the use of semi rigid streamers, particularly those constructed from Kraton. BSLs cannot be deployed while the warp cable is being set, or remain in place during hauling, leaving periods when warps are not protected. Bird mortality as a result of entanglement with the BSL is known to occur (Snell *et al.* 2011; Kuepfer 2016).

Minimum standards

BSL are recommended even when appropriate offal discharge and fish discard management practices are in place (Melvin *et al*. 2010). A BSL should be fitted to the outside of both the starboard and the port-side cable. The main line should extend beyond the warp-water interface and should maintain its tension under normal tow speed. Streamer lines should be attached at maximum 5 m intervals and should be long enough to extend beyond the point at which warp and net monitoring cables reach the water's surface. It is recommended that for every metre of block height, 5 m of backbone be deployed and 1.2 kg of terminal object drag weight be used. An off-setting towed device (Tamini Tabla) has been developed in Argentina (Tamini *et al.* 2023a). This device is attached to the terminal end of the BSL and has a buoyant upper board with three 45° vertical keels, which are weighted for stability. Under forward motion of the vessel, the keels cause the device to move outward of the trawl cables and therefore maintain the BSL from entangling with trawl cables. BSLs should be deployed once the trawl doors are submerged and retrieved as net hauling commences. Where the use of a net monitoring cable cannot be avoided, bird scaring lines should be specifically positioned above the net monitoring cable (Tamini *et al.* 2023b).

Need for combination

Should be used in combination with offal/discard management.

Implementation monitoring

On-board observers, electronic monitoring (cameras), at-sea surveillance or an electronic BSL compliance monitoring device (Ngcongo & Miranda 2024; https://imveloblue.co.za/electronic-monitoring-imvelo-bsl/).

Research needs

Further research is required on reducing the entanglement risk of birds in the BSL.

Mitigation Fact Sheet

https://www.acap.aq/en/resources/bycatch-mitigation/mitigation-fact-sheets/1627-fs-13-trawl-fisheries-warp-strike/file

2.2.2 Net monitoring cable curtain

ACAP advice

Where the use of net monitoring cables cannot be avoided, this method has been shown to reduce bird strikes on these cables.

Scientific evidence for effectiveness in trawl fisheries

The results obtained for the 2025 fishing season in Chile (Adasme *et al.* 2026) showed a relative decrease in bycatch levels compared to previous years. However, the persistence of interactions, especially with the Black-browed Albatross, confirms that this species continues to be the most vulnerable to trawl operations using net monitoring cables, which is consistent with what has been reported in other fisheries in the southern hemisphere (Tamini *et al.* 2023b).

Field trials showed positive effects of this curtain, reducing seabird collisions with the net monitoring cable by up to 90% for nine seabird species, including five ACAP-listed species, when using the net monitoring cable curtain combined with Bird Bafflers (BB) as described in Suazo *et al.* (2024).

Preliminary results related to the use of the net monitoring cable curtain, in combination with other measures, suggest a reduction in the frequency of seabird strikes and a decrease in bycatch events, including mortalities. These findings are consistent with the mitigation principle of reduction in the aerial exposure of the net monitoring cable, consistent with ACAP mitigation advice.

Notes and Caveats

The available results correspond to an early phase of implementation of the net monitoring cable curtain and should be treated with caution. Future analysis will include seasonal and interannual variability in bycatch, operational and environmental factors, as well as the phenology and life strategies of focal seabird species, which may influence the observed patterns described in Adasme *et al*. (2026). In this regard, it is necessary to continue systematic monitoring (including training for onboard observers) to strengthen the *in situ* evidence on the effectiveness of this measure under different operating conditions.

The implementation of the net monitoring cable curtain helps to minimize interactions between seabirds and the net monitoring cable, reducing collisions, and entanglement. However, insufficient observation effort or unobservable/cryptic mortality may mask persistent interactions. In this context, the decrease in observed bycatch may not fully reflect the actual reduction in mortality, given that preliminary records only consider those individuals recovered on board vessels by observers. Regular seabird-dedicated monitoring at the stern of the vessel and during the entire tow (Suazo *et al.* 2024) is encouraged so that correction factors accounting for cryptic mortality can be developed.

Minimum standards

As described by Suazo *et al.* (2024), the net monitoring cable curtain must meet minimum construction standards, including the use of warm colours (e.g., yellow, orange, red), a mesh size of less than 3 1/4 inches, a minimum net panel height of 40 cm, and a double block system for securing the curtain. Additionally, to facilitate the proper vertical deployment of the curtain panel from the stern, added weight may be included at the end of the curtain for its full extension. This weight may consist of a system of chains attached to its lower portion or a terminal block system with added weight. The curtain must cover more than two-thirds of the middle and lower sections of the net monitoring cable, up to the point where it touches the water (the upper third of the net monitoring cable at the stern exit must be covered by the BB or BSL). This requires frequent inspection and adjustment of the curtain's position during towing by crew members trained for this purpose.

Need for combination

As trialled, the net monitoring cable curtain, should be used in combination with BB or BSL depending on the size of vessel along with offal/discard management (Suazo *et al.* 2024; Subpesca 2026)

Implementation monitoring

A combined monitoring system for both scientific and compliance control purposes is highly recommended, including observers onboard, electronic monitoring (cameras), and electronic logbooks (Subpesca, 2026)

Research needs

It is necessary to advance the adoption of methodologies that allow recording and quantifying cryptic mortalities, to obtain more precise and robust estimates on the effectiveness of this bycatch reduction measure in trawl vessels. This goal could be achieved using data currently provided by scientific observers onboard, complemented with data from electronic monitoring.

2.2.3 Net monitoring cable sock

ACAP advice

Where the use of net monitoring cables cannot be avoided, this method has been shown to reduce bird strikes on these cables.

Scientific evidence for effectiveness in trawl fisheries

The sock is designed to enclose the cable to make it more visible to birds and reduce and impact should a bird come into contact with it. It has been developed and improved over a period of five years with observers on a continuous krill trawler, monitoring their effectiveness, observation rates varying from 5% to 20%. During that period the Bird Strikes per Unit of Effort (BPUE) has dropped by over a quarter, from 0.684 / hour to 0.165 / hour (Viney et al 2026).

Notes and Caveats

To date this has only been used on a krill trawler using the continuous trawl method. Conventional trawlers will have a different gear setup and method of operation that may not be compatible with this particular mitigation device.

During early trials the sock would twist around the cable causing it to become damaged and entangled. This was prevented through the use of rope wrapped around the outside of the sock, which prevented it from twisting.

In case of damage, a spare sock should be kept on the vessel to avoid having the cable unprotected for any period of time.

Minimum standards

The sock should reach the sea surface and cover as much of the cable above the sea surface as practically possible. The diameter of the sock should be a minimum of 10cm, sufficient to allow the birds to detect it and reduce any impact if a bird comes into contact with it.

Need for combination

The sock can be used in combination with a curtain, hanging from booms at the stern, its use will depend on the layout of the vessel (Viney et al 2026).

Implementation monitoring

Currently all krill trawl vessels have observers onboard (CCAMLR Conservation Measure 51-06) who ensure that the sock is in place, this should be monitored for any future usage. The observer will monitor the performance of the sock and record and bird contacts. The is done through a combination of deck observations and reviewing of video footage. The vessels have cameras installed which record all of operations.

Research needs

Future research will be based on data collected by observers and will examine if there are any factors that lead to the increase in bird strikes. Research will also need to be conducted on the socks suitability if used on other vessels or in other areas.

2.2.4 Warp scarers

ACAP advice

Insufficient evidence to recommend as an effective measure at this time.

Scientific evidence for effectiveness in trawl fisheries

Warp scarers (weighted devices attached to each warp with clips or hooks, allowing the device to slide up and down the warp freely and stay aligned with each warp) create a protective area around the warp (see Bull 2009, Fig.2; Sullivan *et al*. 2006a).

Warp scarers have been shown to reduce contact rates but not significantly, and were not as effective as BSLs (Sullivan *et al*. 2006b, Abraham *et al*., cited in Bull 2009).

Notes and Caveats

Attachment to the warp eliminates problems associated with crosswinds as the mitigation devices do not behave independently of warps. Warp scarers cannot be deployed while the warp cable is being set, or remain in place during hauling, leaving periods when warps are not protected.

Concerns have been raised regarding associated practicality and safety issues (Melvin *et al.* 2004; Sullivan *et al.* 2006a; Abraham *et al.*, cited in Bull 2009).

Minimum standards

Not applicable, as not recommended.

Need for combination

Not applicable, as not recommended.

Implementation monitoring

Not applicable, as not recommended.

Research needs

None identified.

2.2.5 Bird bafflers

ACAP advice

Insufficient evidence to recommend as an effective measure at this time.

Scientific evidence for effectiveness in trawl fisheries

Bird bafflers comprise two booms attached to both stern quarters of a vessel. Two of these booms extend out from the sides of the vessel and the other two extend backwards from the stern. Dropper lines are attached to the booms, to create a curtain to deter seabirds from the warp-water interface zone (see Bull 2009, Fig.3; Sullivan *et al.* 2006a).

Generally, bird bafflers are not regarded as providing as much protection to the warp cables as BSLs or warp scarers (Sullivan *et al.* 2006a), because they don't tend to extend beyond the warp-water interface area, hence leaving the most dangerous part of the warp exposed.

Notes and Caveats

Various designs exist including the Brady Baffler and "curtain baffler" (Cleal *et al*. 2013).

While bafflers were designed to minimise warp interactions, the Brady Baffler has been used (inappropriately) within CCAMLR icefish fisheries to mitigate net entanglements where they have been found to be consistently ineffective (Sullivan *et al*. 2009).

The great variability in the design and deployment of bird bafflers may influence their overall effectiveness. Designs may also be very vessel-specific to ensure adequate coverage of the warp-water interface. In contrast to some other warp mitigation methods bird bafflers can remain deployed during the full duration of fishing activities.

Minimum standards

Not applicable, as not recommended.

Need for combination

Not applicable, as not recommended.

Implementation monitoring

Not applicable, as not recommended.

Research needs

The full range of baffler designs have not been experimentally tested. Trials should be conducted in a range of fisheries and areas to demonstrate efficacy.

2.2.6 Cones on warp cables

ACAP advice

Insufficient evidence to recommend as an effective measure at this time.

Scientific evidence for effectiveness in trawl fisheries

A plastic cone attached to each warp cable reduced the number of birds entering the warp-water interface in Argentine Hake Trawl Fishery by 89% and no seabirds were killed while cones were attached to the warp (Gonzalez-Zevallos *et al.* 2007).

Notes and Caveats

Applicable for small vessels.

Minimum standards

Not applicable, as not recommended.

Need for combination

Not applicable, as not recommended.

Implementation monitoring

Not applicable, as not recommended.

Research needs

Needs to be trialled in a range of fisheries and areas to demonstrate efficacy.

2.2.7 Warp boom

ACAP advice

Insufficient evidence to recommend as an effective measure at this time.

Scientific evidence for effectiveness in trawl fisheries

A boom with streamers extending to the water forward of the stern and warps can divert birds feeding on offal away from the warps; however, Melvin *et al*. (2010) did not identify a statistically significant reduction is seabird interactions with the warp.

Notes and Caveats

None.

Minimum standards

Not applicable, as not recommended.

Need for combination

Not applicable, as not recommended.

Research needs

Longer-term studies are required to identify effectiveness including work to identify suitable configuration and materials.

2.2.8 Warp deflector

ACAP advice

Insufficient evidence to recommend as an effective measure at this time.

Scientific evidence for effectiveness in trawl fisheries

The *warp deflector,* consisting of a pinkie buoy clipped to each of the warp cables and connected back to the vessel via a retrieval line, is designed to hang at the warp-water interface to deflect birds away from the danger area. The device was found to significantly reduce heavy interactions of shy-type albatross (*Thalassarche*) with trawl warps by Pierre *et al.* (2014). The authors, however, urged for wider testing of the device to support results. Kuepfer (2017) identified numerous practical issues which impacted on the safe and effective deployment of the device in non-experimental conditions.

Notes and Caveats

The east Australia trawl fishery found the device to be impractical and of limited effectiveness, and therefore the warp deflector is now no longer accepted as a stand-alone mitigation measure.

Minimum standards

Not applicable, as not recommended.

Need for combination

Not applicable, as not recommended.

Implementation monitoring

Not applicable, as not recommended.

Research needs

None identified.

3. MITIGATION MEASURES TO REDUCE NET ENTANGLEMENTS

The range of mitigation measures available to prevent net entanglements is limited, and most have not been adequately (and quantitatively) tested. Consequently, there is a need to identify and test measures aimed at addressing the problem of seabirds becoming entangled in nets of trawl vessels, particularly during hauling operations.

3.1 Net cleaning

ACAP advice

Recommended for reducing bycatch during both shooting and hauling of trawl gear in both pelagic and demersal trawl fisheries.

Scientific evidence for effectiveness in trawl fisheries

Removal from nets of all fish 'stickers' and other material is a critical step to reducing net entanglement during shooting (Hooper *et al*. 2003; Sullivan *et al.* 2009).

Notes and Caveats

None.

Minimum standards

Remove all stickers from net prior to shooting gear.

Need for combination

Should be used in combination with net binding and net weights to minimise the time net is on water's surface during both setting and hauling (Sullivan *et al.* 2009), as well as in combination with waste management to avoid the discharge of waste during shooting thereby minimising the attraction of seabirds to the stern of the vessel.

Implementation monitoring

On-board observers or electronic monitoring.

Research needs

None identified.

Mitigation Fact Sheet

https://www.acap.aq/en/resources/bycatch-mitigation/mitigation-fact-sheets/1713-fs-14-trawl-fisheries-net-entanglement/file

3.2 Net binding

ACAP advice

Recommended for reducing bycatch when shooting gear in pelagic trawl fisheries.

Scientific evidence for effectiveness in trawl fisheries

Shown to be a highly effective mitigation measure in CCAMLR icefish trawl fishery, reducing seabird bycatch to minimal levels (Sullivan *et al.* 2009).

Notes and Caveats

Not suitable for demersal trawl gear (Iriarte *et al*. 2023).

Sisal string has been used to bind the sections of the net which pose the greatest threat to seabirds prior to shooting (Sullivan *et al*. 2004). Bindings are simply tied onto the net to prevent the net from lofting and the mesh opening as the tension created by the vessel speed of between 1-3 knots is lost due to waves and swell action. Once shot-away, the net remains bound on the surface until it sinks. Once the trawl doors are paid away and the net has sunk beyond the diving depth of seabirds the force of the water moving the doors apart is sufficient to break the bindings and the net spreads into its standard operational position.

Minimum standards

3–ply sisal string (typical breaking strength of c.110 kg), or a similar inorganic material should be applied to the net on the deck, at intervals of approximately 5 m to prevent net from spreading and lofting at the surface. Net binding should be applied to mesh ranging from 120–800 mm as these are known to cause the majority of seabird entanglements (Sullivan *et al*. 2010). When applying string, tie an end to the net to prevent string from slipping down the net and ensure it can be removed when net is hauled.

Need for combination

Should be used in combination with net cleaning and net weights to minimise the time the net is on the surface (Sullivan *et al*. 2009), as well as in combination with waste management to avoid the discharge of waste during shooting thereby minimising the attraction of seabirds to the stern of the vessel.

Implementation monitoring

On-board observer or electronic monitoring.

Research needs

None identified.

Mitigation Fact Sheet

https://www.acap.aq/en/resources/bycatch-mitigation/mitigation-fact-sheets/1713-fs-14-trawl-fisheries-net-entanglement/file

3.3 Net weighting

ACAP advice

Recommended for reducing bycatch during both shooting and hauling in both pelagic and demersal trawl fisheries.

Scientific evidence for effectiveness in trawl fisheries

Evidence suggests net weighting on or near the cod end increases the angle of ascent of the net during hauling operations, thus reducing the time the net is on the water's surface. In addition, good deck practices to minimise the time that the net is on the water's surface have been the key factors in reducing seabird entanglements during hauling in South Atlantic trawl fisheries (Hooper *et al.* 2003; Sullivan *et al.* 2009).

Notes and Caveats

All attempts should be made to retrieve the net as quickly as possible.

Minimum standards

None established.

Need for combination

Should be used in combination with net binding and net cleaning to minimise the time the net is on the water's surface during both setting and hauling (Sullivan *et al.* 2009), as well as in combination with waste management to avoid the discharge of waste during shooting and hauling thereby minimising the attraction of seabirds to the stern of the vessel.

Implementation monitoring

On-board observers or electronic monitoring.

Research needs

Development of minimum standards for amount and placement of weight (cod end, wings, footrope, mouth, belly), to build on work to date in CCAMLR trawl fisheries (Sullivan *et al*. 2009).

Mitigation Fact Sheet

https://www.acap.aq/en/resources/bycatch-mitigation/mitigation-fact-sheets/1713-fs-14-trawl-fisheries-net-entanglement/file

3.4 Minimise pooling area

ACAP advice

Insufficient evidence to recommend as an effective measure at this time.

Scientific evidence for effectiveness in trawl fisheries

Trials summarised by Steele-Mortimer & Wells (2023) indicate the merits of turning the vessel to close the net (by bunching it against a stern quarter of the trawl ramp) as a mitigation approach. While there is no empirical evidence that operations to close the headline of the net will reduce net entanglements, it is logical that minimising the surface area of the exposed risk will reduce risk.

Notes and Caveats

Some vessels may be unable to turn the vessel while hauling for operational reasons (i.e. the structure of the vessel doesn't allow for it, limited sea space, or vessel which directly haul nets onto a net drum).

Minimum standards

None established.

Need for combination

Should be used in combination with good net cleaning and other applicable best practice measures.

Implementation monitoring

None established.

Research needs

Further testing, preferably in a range of fisheries, to determine quantitatively if measure is effective.

3.5 Reduced mesh size

ACAP advice

Insufficient evidence to recommend as an effective measure at this time.

Scientific evidence for effectiveness in trawl fisheries

Roe (2005) reported on the use of reduced mesh size from 200 to 140 mm in the pelagic icefish fishery in CCAMLR waters, but did not quantify the effectiveness of the measure.

Notes and Caveats

Theoretically this measure could be effective in reducing the incidence of seabird entanglements in net; however, measure may be impractical and lead to higher bycatch of smaller sized fish. Reduced mesh size was believed to have caused severe damage to the net because of increased water pressure during trawling (Roe 2005), although the use of chain weights in the net may also have been influential.

Minimum standards

Not applicable, as not recommended.

Need for combination

Not applicable, as not recommended.

Implementation monitoring

Not applicable, as not recommended.

Research needs

Thorough testing in a range of fisheries is required to determine if measure is practical and effective, as well as to identify potential impact on target catch and bycatch species.

3.6 Net jackets

ACAP advice

Unproven and not recommended as a mitigation method at this time.

Scientific evidence for effectiveness in trawl fisheries

Free-floating panels of net attached to the most dangerous mesh sizes have been trialled in CCAMLR's icefish trawl fishery, with uncertain efficiency (Sullivan *et al.* 2009).

Caveats /Notes

Found to cause serious drag and subsequent damage to the net. Drag also slows vessel speed and increases fuel consumption (Sullivan *et al*. 2009).

Minimum standards

Not applicable, as not recommended.

Need for combination

Not applicable, as not recommended.

Implementation monitoring

Not applicable, as not recommended.

Research needs

Efficacy of measure remains to be demonstrated.

Mitigation Fact Sheet

https://www.acap.aq/en/resources/bycatch-mitigation/mitigation-fact-sheets/1713-fs-14-trawl-fisheries-net-entanglement/file

3.7 Acoustic deterrents

ACAP advice

Unproven and not recommended as a primary mitigation method at this time.

Scientific evidence for effectiveness in trawl fisheries

The use of acoustic 'scaring' devices on nine vessels in CCAMLR trawl fisheries indicated that loud noises (bells and flares/fireworks) had limited effect and birds quickly became habituated to the sound, no longer causing an aversion response (Sullivan *et al*. 2009).

Notes and Caveats

May be a useful back-up measure for circumstances when another measure is needed immediately (Sullivan *et al*. 2009).

Minimum standards

Not applicable, as not recommended.

Need for combination

Not applicable, as not recommended.

Implementation monitoring

Not applicable, as not recommended.

Research needs

None identified.

3.8 Net restrictor

ACAP advice

Unproven and not recommended as a primary mitigation method at this time.

Scientific evidence for effectiveness in trawl fisheries

The net restrictor was identified as a potential mitigation device in response to observed net captures in the New Zealand scampi trawl fishery, where multiple nets are deployed adjacently (Pierre *et al.* 2013). The net restrictor acts to restrict the opening of the net on haul when captures tend to occur. Video footage confirmed that the restrictor was effective in reducing the size of the net opening at hauling; although empirical testing of the device has not been conducted.

Notes and Caveats

May be a useful measure in demersal trawl fisheries where multiple nets are deployed adjacently, and nets (particularly the middle net) are liable to billow open at or near the surface on haul.

Minimum standards

Not applicable, as not recommended.

Need for combination

Not applicable, as not recommended.

Implementation monitoring

Not applicable, as not recommended.

Research needs

At-sea testing required to determine effectiveness.

4. GENERAL MEASURES

4.1 Time-Area closures

ACAP advice

Recommended as a general mitigation measure but need to be aware of displacing the risk to adjacent areas (Copello et al 2016) or other fishing methods (Baez et al 2014).

Scientific evidence for effectiveness in trawl fisheries

Avoiding fishing at peak areas and during periods of intense foraging activity has been used effectively to reduce bycatch in longline fisheries. The principles are directly transferrable to trawl and other net fisheries.

In some studies, longline-associated mortality has been almost exclusively within the breeding season of seabirds. Several studies have also shown that proximity to breeding colonies is an important determinant of seabird bycatch rates (Moreno *et al.* 1996; Nel *et al*. 2002) and temporal closures around breeding areas contributed to a substantial reduction in seabird bycatch (Croxall & Nicol 2004).

Notes and Caveats

An important and effective management response, especially for high risk areas, and when other measures prove ineffective. There is a risk that temporal/spatial closures could displace fishing effort into neighbouring or other areas which may not be as well regulated, thus leading to increased incidental mortality elsewhere.

Minimum standards

None established.

Need for combination

Must be combined with other recommended measures, both in the specific areas when the fishing season is opened, and also in adjacent areas to ensure displacement of fishing effort does not merely lead to a spatial shift in the incidental mortality.

Implementation monitoring

VMS/AIS systems or at-sea surveillance.

Research needs

Further information about the seasonal variability in patterns of species abundance around trawl fisheries is required.

5. OTHER CONSIDERATIONS

5.1 Lasers

ACAP advice

High energy lasers are strongly discouraged.

Scientific evidence for effectiveness in trawl fisheries

Available evidence shows that high energy lasers (Class 4 lasers, the highest class in terms of laser hazards) are ineffective at deterring seabirds from danger areas around fishing vessels (Melvin *et al.* 2016) and likely damage seabird visual systems with negative effects on foraging behaviour of laser exposed seabirds (Fernandez-Juricic, 2023).

Notes and Caveats

Concerns are ongoing regarding the safety (to both humans and birds) and efficacy of laser technology of unknown energy levels as a seabird bycatch mitigation tool, as they continue to be used currently in various fisheries. Available evidence shows that high energy lasers are no longer marketed for fishery applications. Currently evidence is lacking on the possibility that lasers of lower energy levels delivered in different ways (scanning, blinking, wave-length, etc.) could be used safely and be effective in some applications.

Minimum standards

Not applicable, as strongly discouraged.

Need for combination

Not applicable, as strongly discouraged.

Implementation monitoring

Not applicable, as strongly discouraged.

Research needs

As high energy lasers continue to be used in some fisheries, we encourage reporting of the extent and output power levels of laser use by ACAP Parties, including any information on effectiveness, as well as bird welfare effects.

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ANNEXE 4. RÉSUMÉ DES CONSEILS DE BONNES PRATIQUES DE L'ACAP POUR LES PÊCHES À LA PALANGRE DÉMERSALE

Agreement on the Conservation of Albatrosses and Petrels

ACAP 2026 Summary Best Practice Advice for Reducing the Impact of Demersal Longline Fisheries on Seabirds

Reviewed at the Fifteenth Meeting of the Advisory Committee
Swakopmund, Namibia, 1 – 5 June 2026

BEST PRACTICE MEASURES

ACAP recommends that the most effective way to reduce seabird bycatch in demersal longline fisheries is to use the following three best practice measures **simultaneously: branch line weighting, night setting and bird scaring lines**.

The simultaneous use of the three ACAP recommended mitigation measures optimise seabird bycatch reduction in demersal longline fisheries. All three recommended measures are demonstrated to be effective; however, each have limitations when used alone. There is a period of time when hooks are accessible to birds even when branch lines are weighted. Night setting used alone is less effective at reducing seabird bycatch for nocturnally active birds and during bright moon light conditions. Bird scaring lines used alone can rarely protect baited hooks beyond the aerial extent of the line. Consequently, the simultaneous use of the three ACAP recommended seabird bycatch mitigation measures compensate for these limitations.

Further mitigation measures that can be implemented by demersal longline fishing vessels include bird exclusion devices at the hauling bay, responsible offal management and avoiding peak areas and periods of seabird foraging activity.

Best practice mitigation measures and recommendations for demersal longline fisheries are detailed and categorised into: (1) general best practice measures; (2) best practice measures for line setting operations; (3) best practice measures for line hauling operations; and (4) other recommendations.

1. BEST PRACTICE MEASURES - GENERAL

1.1 Area and seasonal closures

The temporary closure of important foraging areas (e.g. areas adjacent to important seabird colonies during the breeding season when large numbers of aggressively feeding seabirds are present) to fishing will reduce incidental mortality of seabirds in fisheries in those areas.

2. BEST PRACTICE MEASURES - LINE SETTING

2.1 Line weighting

Lines should be weighted to sink baited hooks rapidly out of the range of feeding seabirds as close to the vessel as possible. Weights should be deployed before line tension occurs to ensure that the line sinks rapidly and consistently.

2.1a Externally weighted double lines without nets: Spanish system

For vessels using the Spanish double longling system of fishing, line weights should be set with a minimum of:

- 5 kg at 40 m intervals when using solid steel weights;
- 8.5 kg at 40 m intervals when using rock weights; or
- 6 kg at 20 m intervals when using concrete weights.

The use of steel weights is considered best practice, as they sink hooklines consistently.

2.1b Externally weighted double lines with nets: Chilean system (trotline with nets)

For vessels using the Chilean double longline system of fishing, line weights should conform to those for the Spanish system (see above).

2.1c Externally weighted or integrated weight single lines: autoline system

Where practical, Integrated weight (IW) lines are recommended over adding external weights because they sink faster and more consistently.

Recommended integrated weight (IW) longlines have a lead core of 50 g/m. As noted, their key characteristic is that they sink with a near-linear profile from the surface with minimal lofting in propeller turbulence, and are effective at sinking quickly out of reach of foraging seabirds. The mean sink rate of IW lines should be ≥ 0.24 m/s to 10 m depth.

If external weights are used instead of IW lines, the mean average sink rate should be 0.3 m/s to 10 m depth. A faster sink rate is necessary with this configuration to minimise the lofting of sections of line (baited hooks) between line weights in propeller turbulence. The stipulated sink rate can be achieved with a minimum of 5 kg at intervals of no more than 40 m.

2.2 Night setting

Setting longlines at night (defined as the time between the end of nautical twilight and before nautical dawn as set out in the Nautical Almanac tables for relevant latitude, local time and date) is highly effective at reducing incidental mortality of seabirds because the majority of vulnerable seabirds including albatrosses are inactive at night. However, night setting is not as effective for crepuscular/nocturnal foragers (e.g. White-chinned Petrels *Procellaria aequinoctialis* and Northern Fulmars (*Fulmarus glacialis*). The effectiveness of this measure may be reduced during bright moonlight or when using intense deck lights. Night setting is impractical in high latitudes during summer, when the time between nautical dusk and dawn is limited.

Night setting is recognised as consistently defined, widely reflected in conservation and management measures and has benefit as a primary mitigation measure, as it has the potential for compliance monitoring through VMS and other tools.

2.3 Bird scaring lines (BSLs)

Properly designed and deployed bird scaring lines (BSLs) deter birds from sinking baits, dramatically reducing seabird attacks and related mortalities. A bird scaring line runs from a high point at the stern to a device or mechanism that creates drag at its in-water terminus. Drag created by the towed device or the in-water extent of the line, lifts the length of the line closest to the vessel into the air as the vessel travels forward setting gear. Brightly coloured streamers hanging from the aerial extent of the line scare birds from flying to and under the line, preventing them from reaching the baited hooks. It is essential that the aerial extent matches the distance astern that seabirds can access baited hooks. Weighted hooklines reduce this distance and make streamer lines more efficient at excluding foraging birds from hooks.

BSLs should be the lightest practical strong fine line. Lines should be attached to the vessel with a barrel swivel to minimise rotation of the line from torque created as it is dragged behind the vessel. Long streamers should be attached with a swivel to prevent them from rolling up onto the BSL. Towed objects should be attached at the terminus of the BSL to increase drag. Weak links (breakaways) should be incorporated into the in-water portion of the line for safety reasons and to minimize operational problems should lines become tangled.

It is also recommended to use a weak link to allow the BSL to break-away from the vessel in the event of an entanglement with the main line. A secondary attachment between the BSL and vessel allows an entangled BSL to be recovered during the haul.

Sufficient drag is essential to maximise aerial extent and maintain the line directly behind the vessel during crosswinds.

Given operational differences in demersal longline fisheries due to vessel size and gear type, BSL specifications have been divided into recommendations for vessels greater than 24 metres and those less than 24 metres in length.

2.3a Recommendations for vessels ≥24 m in length

Simultaneous use of two (paired) BSLs, one on each side of the sinking longline, provides maximum protection from bird attacks under different wind conditions. The setup for BSLs should be as follows:

- BSLs should be deployed to maximise the aerial extent, which is a function of vessel speed, height of the attachment point to the vessel, drag, and weight of bird scaring line materials.
- To achieve a minimum recommended aerial extent of 150 m, BSLs should be attached to the vessel such that they are suspended from a point a minimum of 7 m above the water at the stern.
- BSLs should contain a mix of brightly coloured long and short streamers placed at intervals of no more than 5 m. Long streamers should be attached to the line with swivels to prevent streamers from wrapping around the line. All long streamers should reach the sea-surface in calm conditions.

- Sufficient drag must be created to maximise aerial extent and maintain the line directly over sinking baited hooks and astern of the vessel during crosswinds. This may be achieved using a towed device.

2.3b Recommendations for vessels <24 m in length

One or two (paired) bird scaring lines should be used to provide maximum protection from bird attacks under different wind conditions. The setup for BSLs should be as follows:

- The attachment height should be a minimum of 6 m above sea level at the stern.
- The lines should achieve an aerial extent of at least 75 m when setting at ≥ 4 knots, or 50 m if setting at speeds < 4 knots.
- Streamers should be brightly coloured and reach the sea-surface in calm conditions, and placed at intervals of no more than 5 m. Streamers may be modified over the first 10 m to avoid tangling.
- Sufficient drag must be created to maximise aerial extent and maintain the line directly over sinking baited hooks and astern of the vessel during crosswinds. This may be achieved using a towed device.

2.4 Offal and discard discharge management

Seabirds are highly attracted to offal and discards discharged from vessels. To prevent large numbers of seabirds attending line setting operations, offal and discards should be retained onboard prior to and during line setting.

3. BEST PRACTICE MEASURES - LINE HAULING

3.1. Bird Exclusion Device (BED)

Seabirds can be accidentally hooked as gear is retrieved. A Bird Exclusion Device (BED) consists of a horizontal support several metres above the water that encircles the entire hauling bay. Vertical streamers are positioned between the horizontal support and water surface. The BED configuration can also include a line of floats on the water surface connected to the vertical streamers to stabilize movement in strong winds. This configuration is the most effective method to prevent birds entering the area around the hauling bay, either by swimming or by flying. BEDs are retrieved and stowed when not hauling. For small vessels (<20 m in length), where the application of mitigation devices requiring robust support structures and on-water sections can be challenging, the use of simple haul mitigation devices has been demonstrated to be both practical and effective at deterring birds from hauling points.

3.2. Offal and discard discharge management

During setting, offal and discards should always be retained onboard. During hauling, offal and discards should be retained on board or released from the opposite side of the vessel to the hauling bay.

All hooks should be removed from fish and retained on board before fish and fish parts are discarded from the vessel.

ACAP's Review of Seabird Bycatch Mitigation Measures for Demersal Longline Fisheries provides further information on all of these methods, as well as other considerations.

4. MITIGATION MEASURES THAT ARE NOT RECOMMENDED

ACAP considers that the following measures currently lack scientific substantiation as technologies or procedures for reducing the impact of demersal longline fisheries on seabirds:

Hook design - insufficiently researched.

Olfactory deterrents - insufficiently researched.

Acoustic deterrents - insufficiently researched.

Strategic management of offal discharge – operational difficulties.

Use of a line setter/shooter - insufficiently researched.

Underwater line setter - insufficiently researched.

Underwater setting chutes - insufficiently researched.

Lasers - High energy lasers are strongly discouraged due to ongoing concerns regarding safety to both humans and birds.

Mitigation measures to improve sink rates of baited hooks on floated longlines – insufficiently researched.

ANNEXE 5. EXAMEN PAR L'ACAP DES MESURES D'ATTÉNUATION DES CAPTURES ACCESSOIRES D'OISEAUX MARINS DANS LA PÊCHE À LA PALANGRE DÉMERSALE

Agreement on the Conservation of Albatrosses and Petrels

ACAP 2026 Review of Seabird Bycatch Mitigation Measures for Demersal Longline Fisheries

Reviewed at the Fifteenth Meeting of the Advisory Committee
Swakopmund, Namibia, 1 – 5 June 2026

INTRODUCTION

The incidental mortality of seabirds, mostly albatrosses and petrels, in demersal longline fisheries continues to be a growing global concern. The need for international cooperation in addressing this concern was a major reason for establishing the Agreement on the Conservation of Albatrosses and Petrels (ACAP). In demersal longline fisheries seabirds are killed when they become hooked or entangled and drowned while foraging for baits on longline hooks as the gear is deployed. Seabirds can also be hooked or entangled as the gear is hauled; however, many of these seabirds can be released alive with careful handling.

Demersal longline fisheries are those in which baited hooks are set on, or near the sea floor using a variety of systems and configurations. These include systems that deploy a single hookline (manually baited or mechanically baited (single line) systems), and systems that include a second hauling line floated above a hookline or a cluster of baited hooks (Spanish and Chilean (trotline) systems).

Many mitigation methods to reduce and eliminate seabird bycatch have been developed and tested over the last 20 plus years, especially for demersal longline fisheries. Although most mitigation measures are broadly applicable, the feasibility, design and effectiveness of some measures will be influenced by longlining method, gear configuration, and vessel size. Note, most scientific literature relates to fleets of larger vessels (typically ≥24m). Some of this advice may need modification for smaller vessels (typically <24m).

A range of technical and operational mitigation methods have been designed or adapted for use in demersal longline fisheries to reduce incidental mortality of seabirds. Operationally, peak areas and periods of seabird foraging activity should be avoided. Effective technical methods include actively deterring birds from, and minimising the visibility of, baited hooks. Vessels need to be made less attractive to birds, and the distance astern and time baited hooks are available to birds during line setting must be reduced. Mitigation methods need to be easy and safe to implement, cost effective, enforceable and should not reduce catch rates of target species or increase the bycatch rates of other protected species.

The feasibility, effectiveness and specifications of mitigation measures may vary by area, seabird assemblage, fishery, vessel size, and gear configuration. Some of the mitigation methods are well established and explicitly prescribed in demersal longline fisheries; however, additional measures are undergoing further testing and refinements.

The Seabird Bycatch Working Group (SBWG) of ACAP has comprehensively reviewed the scientific literature dealing with seabird bycatch mitigation in demersal longline fisheries. This document is a distillation of that review. With the exception of the Chilean system, the simultaneous use of weighted lines, bird scaring lines and night setting is considered best practice mitigation for reducing seabird bycatch in demersal longline fisheries. Although the Chilean system effectively prevents mortality as a sole measure given that hooks sink quickly from the surface, it is recommended to simultaneously deploy bird scaring lines.

THE ACAP REVIEW PROCESS

At each of its meetings, the ACAP SBWG considers any new research or information pertaining to seabird bycatch mitigation in demersal longline fisheries. The following criteria are used by ACAP to guide the assessment process, and to determine whether a particular technology or measure can be considered best practice to reduce the incidental mortality of albatrosses and petrels in fishing operations.

Best Practice Seabird Bycatch Mitigation Criteria and Definition

i. Individual fishing technologies and techniques should be selected from those shown by experimental research to significantly[7] reduce the rate of seabird incidental mortality[8] to the lowest achievable levels. Experimental research yields definitive results when performance of candidate mitigation technologies is compared to a control (no deterrent), or to status quo in the fishery. When testing relative performance of mitigation approaches, analysis of fishery observer data can be plagued with a myriad of confounding factors. Where a significant relationship is demonstrated between seabird behaviour and seabird mortality in a particular system or seabird assemblage, significant reductions in seabird behaviours, such as the rate of seabirds attacking baited hooks, can serve as a proxy for reduced seabird mortality. Ideally, where simultaneous use of fishing technologies and practices is recommended as best practice, research should demonstrate significantly improved performance of the combined measures.

ii. Fishing technologies and techniques, or a combination thereof, should have clear and proven specifications and minimum performance standards for their deployment and use. Examples would include: specific bird scaring line designs (lengths, streamer length and materials; etc.), number (one vs. two) and deployment specifications (such as aerial extent and timing of deployment); night fishing defined by the time between the end of nautical dusk and start of nautical dawn; and, line weighting configurations specifying mass and placement of weights or weighted sections.

iii. Fishing technologies and techniques should be demonstrated to be practical, cost effective and widely available. Commercial fishing operators are likely to select for seabird bycatch reduction measures and devices that meet these criteria including practical aspects concerning safe fishing practices at sea.

iv. Fishing technologies and techniques should, to the extent practicable, maintain catch rates of target species. This approach should increase the likelihood of acceptance and compliance by fishers.

v. Fishing technologies and techniques should, to the extent practicable not increase the bycatch of other taxa. For example, measures that increase the likelihood of catching other protected species such as sea turtles, sharks and marine mammals, should not be considered best practice (or only so in exceptional circumstances).

vi. Minimum performance standards and methods of ensuring compliance should be provided for fishing technologies and techniques, and clearly specified in fishery regulations. Relatively simple methods to check compliance should include, but not be limited to, port inspections of branch lines to determine compliance with branch line weighting, determination of the presence of davits (tori poles) to support bird scaring lines, and inspections of bird scaring lines for conformance with design requirements.

[7] Any use of the word 'significant' in this document is meant in the statistical context
[8] This may be determined by either a direct reduction in seabird mortality or by reduction in seabird attack rates, as a proxy

Compliance monitoring and reporting should be a high priority for enforcement authorities.

On the basis of these criteria, the scientific evidence for the effectiveness of mitigation measures or fishing technologies/techniques in reducing seabird bycatch is assessed, and explicit information is provided on whether the measure is recommended as being effective, and thus considered best practice, or not. The ACAP review also indicates whether the measure needs to be combined with additional measures, and provides notes and caveats for each measure, together with information on performance standards and further research needs. Following each meeting of ACAP's SBWG and Advisory Committee, this review document and ACAP's best practice advice, is updated (if required). A summary of ACAP's current best practice advice is provided in the preceding section of this document.

SEABIRD BYCATCH MITIGATION FACT SHEETS

A series of seabird bycatch mitigation fact sheets have been developed by ACAP and BirdLife International to provide practical information, including illustrations, on seabird bycatch mitigation measures (https://www.acap.aq/bycatch-mitigation/bycatch-mitigation-fact-sheets). The sheets, which include information on the effectiveness of the specific measure, their limitations and strengths and best practice recommendations for their effective adoption, are linked to the ACAP review process, and are updated following ACAP reviews. Links to the available fact sheets are provided in the relevant sections below. The mitigation fact sheets are currently available in English, French, Spanish, Portuguese, Japanese, Korean, Simplified Chinese, Traditional Chinese, and Indonesian.

BEST PRACTICE MEASURES

1. Area and seasonal closures

Scientific evidence for effectiveness in demersal longline fisheries

Proven and recommended mitigation measure. Must be combined with other measures, especially appropriately weighted lines, effective bird scaring lines, night setting and offal management both in the specific areas at which time the fishing season is reopened, and also in adjacent areas to ensure displacement of fishing effort does not lead to a spatial shift in the incidental mortality. A number of studies have reported marked seasonality in seabird bycatch rates, with the majority of deaths taking place during the breeding season (Moreno *et al.* 1996; Ryan *et al*. 1997; Ashford & Croxall 1998; Ryan & Purves 1998; Ryan & Watkins 1999; Ryan & Watkins 2000; Weimerskirch *et al*. 2000; Kock 2001; Nel *et al*. 2002; Ryan & Watkins 2002; Croxall & Nicol 2004; Reid *et al*. 2004; Delord *et al*. 2005). In some studies, mortality occurred almost exclusively within the breeding season. Several studies have also shown that proximity to breeding colonies is an important determinant of seabird bycatch rates (Moreno *et al*. 1996; Nel *et al*. 2002). The much higher rate of seabird bycatch during the breeding period led to the temporal closure of the fishery in CCAMLR sub-area 48.3 from 1998, which contributed to a ten-fold reduction in seabird bycatch (Croxall & Nicol 2004). Movement of fishing effort away from the Prince Edward Islands coincided with a reduction in seabird bycatch in the sanctioned Prince Edward Island fishery (Nel *et al*. 2002).

Notes and Caveats

It's difficult to separate the performance of a temporal/spatial closure from increased uptake/implementation of other mitigation measures. Likewise, some variation over time and space in the location of favoured foraging areas for seabirds is expected. However, closures are clearly an important and effective management response, especially for high risk areas, and when other measures prove ineffective (Waugh 2008). There is a risk that temporal/spatial closures could displace fishing effort into neighbouring or other areas which may not be as well regulated, thus leading to increased incidental mortality elsewhere (Copello *et al.* 2016).

Minimum standards

Minimum standards are based on the overlap of albatrosses and petrels with fishing effort so can vary from area to area. For example, the area around South Georgia (Islas Georgias del Sur)[9] (CCAMLR Subarea 48.3) is closed for fishing between September and mid-April each year (which coincides with the breeding seasons of most seabirds at South Georgia (Islas Georgias del Sur)[3]), as provided for by CCAMLR Conservation Measures in force (CCAMLR 2019).

Implementation monitoring

Onboard at-sea surveillance or AIS is required to assess implementation.

Research needs

Continued gathering of temporal and spatial information of seabirds and fishing effort, should be ongoing, especially for high risk areas (e.g. adjacent to important breeding colonies) and to better understand the effects of climate change on seabirds. In some studies, incidental mortality has been greatest during the chick-rearing period (Nel *et al*. 2002; Delord *et al*. 2005), whereas others have reported highest mortality during the incubation period (Reid *et al*. 2004). This difference likely relates to where the birds are foraging in relation to fishing effort at the time, and highlights the importance of understanding this interaction. Research is also required to determine the regional impact of closures on catches of target species.

2.a) Externally weighted double lines without nets: Spanish system

Scientific evidence for effectiveness in demersal longline fisheries

Proven and recommended mitigation method. Should be combined with other measures, especially effective bird scaring lines, offal management and/or night setting (Agnew *et al.* 2000; Robertson 2000; Robertson *et. al*. 2008a; 2008b; Moreno *et al*. 2006; Moreno *et al*. 2008; Düssler *et al*. 2026).

Notes and Caveats

Spanish system double longlines are buoyant and weights must be attached to sink gear to fishing depth. Longlines with externally added weights sink unevenly, with faster rates at the

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[9] A dispute exists between the Governments of Argentina and the United Kingdom of Great Britain and Northern Ireland concerning sovereignty over the Falkland Islands (Islas Malvinas), South Georgia and the South Sandwich Islands (Islas Georgias del Sur e Islas Sandwich del Sur) and the surrounding maritime areas.

weights than at the midpoint between weights. Although gear configuration and setting speed influence the sink profiles of the hook lines (Seco Pon *et al*. 2007), the principle determinants of sink rates are the mass of the weights and the distance between them (Robertson *et al*. 2008a). It is critical that line tension astern is eliminated to ensure the smooth flow of lines and hooks from gear baskets. This can be done by ensuring the correct packing of lines and snoods in baskets, preventing hooks snagging on snood baskets, and by ensuring that weights are released from the vessel before line tension occurs (Robertson *et al*. 2008a,b). Weights must be attached and removed for each set-haul cycle, which is onerous and potentially hazardous for crew members. Weights comprised of rocks enclosed in netting bags and concrete blocks deteriorate and require ongoing maintenance/replacement and monitoring to ensure weights are the required mass (Otley *et al*., 2007); weights made of solid steel are much preferred, in terms of mass consistency, handling, maintenance and monitoring compliance (Robertson *et al*. 2008b, Paterson *et al*. 2017). Achieving faster sink rates may be needed to effectively mitigate seabird bycatch in areas with deep diving petrels (Düssler *et al*. 2026).

Minimum standards

Global minimum standards have not been established. Requirements vary by fishery. For example, CCAMLR minimum requirements for vessels using the Spanish double longline method of longline fishing are:

- 5 kg weights at 40 m intervals when using solid steel weights;
- 8.5 kg mass at 40 m intervals when using rocks at weights; or
- 6 kg mass at 20 m intervals when using concrete weights.

Implementation monitoring

Fishing gear is deployed manually. Weights are attached by hand during line setting and removed during line hauling. Distance between weights and the mass of the weight used may vary in accordance with fishing strategy and for operational reasons. Onboard monitoring is required to assess implementation.

Research needs

Sink rates and sink profiles of line weighting regimes may vary according to vessel type, setting speed and deployment position relative to propeller turbulence. It is important that the sink rate relationships of different line weighting regimes are understood for a particular fishery (or fishery method) and that testing confirms the effectiveness of the line weighting regime and the sink profile in reducing seabird mortality.

Mitigation Fact Sheet

https://www.acap.aq/en/resources/bycatch-mitigation/mitigation-fact-sheets/762-fs-02-demersal-longline-line-weighting-external-weights/file

2.b) Externally weighted lines: Chilean double line method (trotline with nets)

Scientific evidence for effectiveness in demersal longline fisheries

Proven and recommended mitigation method. Although the Chilean method effectively prevents mortality as a sole measure given that hooks sink quickly from the surface, it is recommended to also deploy a bird scaring streamer line. This method (first tested on large longline vessels in 2005) is a variant of the traditional Spanish double line method of longlining and was developed in Chile to minimise depredation of Patagonian toothfish by toothed whales (Figure 1). This system makes use of net sleeves or 'cachaloteras' which envelop captured fish during hauling. Hooks are clustered on secondary lines to which weights are attached, resulting in very fast hook sink rates (mean: 0.8 m/s c.f. 0.15 m/s for the Spanish system) in the first 15-20 m (the length of the secondary lines) of the water column. The Chilean method has the capacity to reduce (or eliminate) seabird mortality to negligible levels (Moreno *et al*. 2006; Moreno *et al*. 2008; Robertson *et al*. 2008b). Because of its effectiveness in reducing impacts of toothed whales, this method is currently used in many longline fleets operating in South American waters (Moreno *et al*. 2008), as well as in the south west Atlantic.

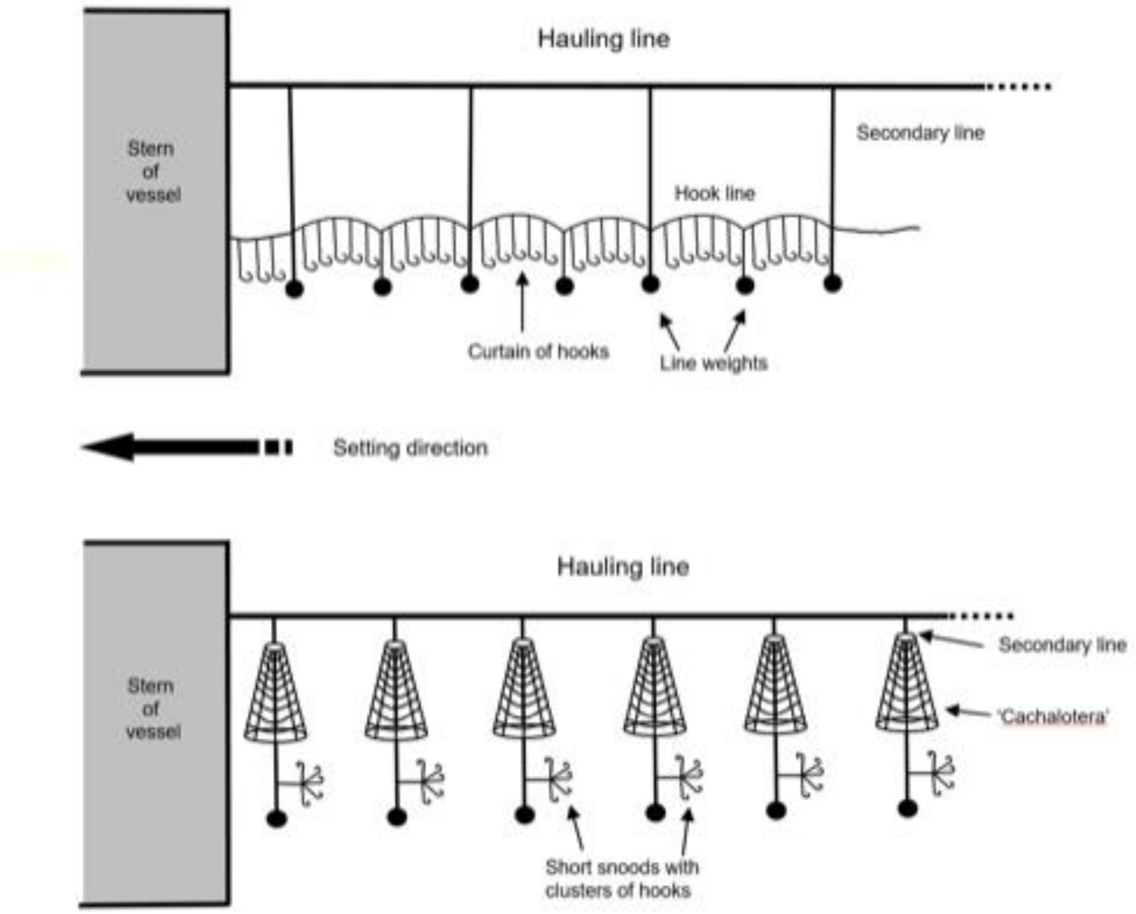

Figure 1. Typical configurations of the traditional Spanish double line system (top panel) and Chilean (trotline) system (bottom panel) showing differences in gear design and location of weights in relation to hooks. The open-ended secondary/connecting lines (not joined by a continuous hook line) and proximity of weights to hooks of the Chilean system enables hooks to sink rapidly with no lofting in propeller turbulence from the surface close to a vessel stern. Drawings not to scale.

Notes and Caveats

Although this system has been in use since 2005, it should still be monitored and possibly refined. Concern has been raised about the excessive discarding of fish bycatch (e.g.

grenadiers) with embedded hooks from the hook cluster and the ingestion of these hooks by albatrosses especially with this gear type (Phillips *et al*. 2010). The solution to this problem is to stop hooks from being discarded. This is best achieved by banning the discarding of hooks as part of the licence conditions, as is already done in many fisheries, and also increasing awareness amongst fishers, observers, and operators to facilitate compliance with such a ban.

Minimum standards

Global standards not established.

Implementation monitoring

Weights need to be attached to hook-bearing secondary lines to sink. However, alternating between the Chilean fishing method and the traditional Spanish method within fishing trips does take place and is problematic. While this capacity exists, the Spanish system requirements should apply to both methods within a trip (see "2a", above). Onboard monitoring is required to assess implementation.

Research needs

Although likely effective as a solitary measure against albatrosses and most likely effective against *Procellaria* spp. petrels due to the very rapid sink rates to depths beyond the known diving range of this group of seabirds, the simultaneous use of bird scaring lines is recommended. Research is required to determine effectiveness against *Puffinus* spp. shearwaters.

This is still considered a relatively new fishing method and may need further refinement. It is important to monitor changes to gear design, especially those likely to affect the sink rates of baited hooks.

Mitigation Fact Sheet

https://www.acap.aq/en/resources/bycatch-mitigation/mitigation-fact-sheets/1799-fs-04-demersal-longline-line-weighting-chilean-system/file

2.c) Externally weighted lines: Auto-bait

Scientific evidence for effectiveness in demersal longline fisheries

Proven and recommended mitigation method. Weights must be used in combination with an effective bird scaring line. In the Southern Hemisphere, evidence in support of line weighting specifications (below) were developed based on matching or exceeding sink rates of external weight configurations to that of integrated weight lines, not to their effectiveness at deterring seabirds. Attachment of 5 kg weights at no more than 40 m intervals increased mean sink rate from 0.1 m/s (unweighted gear) to 0.3 m/s on the section of longlines mid-way between line weights (Robertson 2000). This rate exceeds that of integrated weight longlines, which have been thoroughly tested against seabirds (see below). Attachment of external weights is necessary in Antarctic toothfish *Dissostichus mawsoni* fisheries to comply with the minimum sink rate (0.3 m/s) required by CCAMLR for vessels operating in high latitude areas in summer, where it was not possible to set lines at night.

Notes and Caveats

As for the Spanish system it is important to release external weights from vessels in a manner that avoids line tension. Line tension astern may lift sections of the deployed longline already deployed out of the water farther from the vessel, and enhances the risk of seabirds being hooked. Achieving faster sink rates may be needed to effectively mitigate seabird bycatch in areas with deep diving petrels (Düssler *et al*. 2026).

Minimum standards

Minimum standards are informed by those currently applied to two Southern Hemisphere fisheries. CCAMLR requires, as a minimum, a 5 kg mass at intervals no more than 40 m. It is also required that weights be released before line tension occurs. In the New Zealand fisheries, a minimum of 4 kg (metal weight) or 5 kg (non-metal weight) are required every 60 m if the hookline is 3.5 mm or greater in diameter, and a minimum of 7 kg of weight every 60m when the line is less than 3.5 mm diameter.

Implementation monitoring

Weights are attached to longlines manually. Onboard monitoring is required to assess implementation.

Research needs

Likely to be effective in deterring albatrosses and *Procellaria* spp. petrels from sinking baited hooks. Evidence is lacking for effectiveness against *Puffinus* spp. shearwaters.

Mitigation Fact Sheet

https://www.acap.aq/en/resources/bycatch-mitigation/mitigation-fact-sheets/762-fs-02-demersal-longline-line-weighting-external-weights/file

3. Integrated weight longlines

Scientific evidence for effectiveness in demersal longline fisheries

Proven and recommended mitigation method. Should be used in combination with bird scaring lines, offal management and/or night setting. Apart from the practical advantages of integrated weight (IW) longlines – superior handling qualities and practically inviolable – the IW longlines sink more quickly and uniformly out of reach of most seabirds compared with externally weighted lines. IW longlines have been shown to substantially reduce mortality rates of surface foragers and diving seabirds, while not affecting catch rates of target species (Robertson *et al*. 2003; Robertson *et al.* 2006; Dietrich *et al*. 2008).

Notes and Caveats

Restricted to single line vessels. The sink rate of IW longlines can vary depending on vessel type, setting speed and deployment of line relative to propeller wash (Dietrich *et al.* 2008). Setting speed influences the extent of the seabird access window – the area in which most seabirds are still able to access the baited hooks in the absence of bird scaring lines (Dietrich *et al*. 2008). Use of IW lines is likely to increase the portion of the line on the seafloor, and may lead to increases in the bycatch of vulnerable fish, shark and ray species. This may be mitigated by placing a weight and a float on a 10 m line at the point of the dropper line attachment, thus ensuring the line sinks rapidly to 10 m, out of reach of vulnerable seabirds, but remains off the seabed (Petersen *et al.* 2009). Achieving faster sink rates may be needed to effectively mitigate seabird bycatch in areas with deep diving petrels (Düssler *et al*. 2026). We note that the use of lead in fishing gear is prohibited in some fishery jurisdictions.

Minimum standards

Global minimum standards are evolving. CCAMLR and New Zealand currently require IW lines with a minimum lead core of 50 g/m in their single line demersal longline fisheries.

Implementation monitoring

Weight (lead core) is integrated into the fabric of the line, so compliance with weighting requirements is intrinsic to this measure. It is impractical to alter longlines when at sea, including for vessels with long transit times to fishing grounds (e.g. Antarctic and subantarctic fisheries). Port inspection of all longlines onboard prior to embarkation on fishing trips is considered adequate for to assess compliance.

Research needs

The relationship between line-weighting regime, setting speed, sink rates/profiles and the distance astern seabirds can access baited hooks should be investigated for other fisheries. Testing should prioritize determining the necessary aerial extent for bird scaring lines with these factors.

Mitigation Fact Sheet

https://www.acap.aq/en/resources/bycatch-mitigation/mitigation-fact-sheets/1504-fs-03-demersal-longline-integrated-weight-longlines/file

4. Night setting

Scientific evidence for effectiveness in demersal longline fisheries

Proven and recommended mitigation method. Should be used in combination with bird scaring lines and/or weighted lines, especially to reduce incidental mortality of birds that forage at night (Ashford *et al*. 1995; Cherel *et al*. 1996; Moreno *et al*. 1996; Barnes *et al*. 1997; Ashford & Croxall 1998; Klaer & Polacheck 1998; Weimerskirch *et al*. 2000; Belda & Sánchez 2001; Nel *et al*. 2002; Ryan & Watkins 2002; Sánchez & Belda 2003; Reid *et al*. 2004; Gómez Laich *et al.* 2006; Gladics *et. al*. 2017; Melvin *et.al*. 2019; Düssler *et al*. 2026).

Notes and Caveats

Setting longlines at night (defined as the time between the end of nautical twilight and before nautical dawn as set out in the Nautical Almanac tables for relevant latitude, local time and date) is highly effective at reducing incidental mortality of seabirds because the majority of vulnerable seabirds are inactive at night. However, bright moonlight and deck lights can reduce the effectiveness of this mitigation measure. Night setting can also be less effective for some crepuscular/nocturnal foragers such as the White-chinned Petrel (Paterson *et al*. 2017) but more effective than setting during the day. Night setting increases the bycatch rate of Northern

Fulmar *Fulmarus glacialis* (Gladics *et. al*. 2017; Melvin *et.al*. 2019). In order to maximise effectiveness of this mitigation measure, deck lights should be off or kept to an absolute minimum, and used in combination with additional mitigation measures, especially when setting in bright moonlight conditions. Night setting is not a practical option for fisheries operating at high latitudes during summer. Civil twilight was found equally effective as nautical twilight at reducing seabird mortalities in US west coast and Alaskan fisheries (Gladics *et. al*. 2017; Melvin *et.al*. 2019)

Minimum standards

Night is defined as the period between the times of nautical twilight (nautical dark to nautical dawn as set out in the Nautical Almanac tables for relevant latitude, local time and date.).

Implementation monitoring

Onboard monitoring or at-sea surveillance (including AIS monitoring) is required to assess implementation.

Research needs

Effect of night setting on catch rates of target species for different fisheries.

Mitigation Fact Sheet

https://www.acap.aq/en/resources/bycatch-mitigation/mitigation-fact-sheets/1824-fs-05-demersal-pelagic-longline-night-setting/file

5. Single bird scaring line

Scientific evidence for effectiveness in demersal longline fisheries

Proven and recommended mitigation method. It is the aerial extent of the line with streamers attached that is important for the prevention of bird interactions with baited hooks. Effectiveness of the streamer line is maximized when streamers are positioned above the sinking hook line, and the aerial extent matches the distance astern that seabirds can access baited hooks. Weighted longlines reduce this distance and make streamer lines more efficient at excluding foraging birds from hooks. Effectiveness is increased when using multiple bird scaring lines and when used in combination with other measures – e.g. night setting, appropriate line weighting and offal management. The use of a single bird scaring line has been shown to be an effective mitigation measure in a range of demersal longline fisheries, especially when used properly (Moreno *et al.* 1996; Løkkeborg 1998, 2001; Melvin *et al.* 2001; Smith 2001; Løkkeborg & Robertson 2002; Løkkeborg 2003, Melvin *et. al*. 2004; Dietrich *et al*. 2008; Paterson *et al.* 2017; Melvin *et al*. 2019) and is suitable for small vessels under 24 m in length, with some modification (Melvin & Weinstein. 2004; Goad & Debski 2017).

Notes and Caveats

Effective only when streamers are positioned over sinking hooks and the aerial extent matches the distance astern that seabirds can no longer access baited hooks. These are the most important factors influencing their performance. Single bird scaring lines can be less effective in strong crosswinds (Løkkeborg 1998; Brothers *et al.* 1999; Agnew *et al.* 2000; Melvin *et al.*

2001; Melvin *et al.* 2004). In the event of strong crosswinds, bird scaring lines should be deployed from the windward side. This problem can also be overcome by using paired bird scaring lines (see below). The effectiveness of bird scaring lines is also dependent on the design, proper placement, as well as seabird species attending line setting (proficient divers are more difficult to deter than surface feeding birds). There have been a few incidents of birds becoming entangled in bird scaring lines (Otley *et al*. 2007). However, it must be stressed that the numbers are minuscule, especially when compared with the number of mortalities recorded in the absence of bird scaring lines. Bird scaring lines remain a highly effective mitigation measure, and efforts should be directed to further improve their effectiveness.

Use of a weak link is recommended to allow a bird scaring line to break-away from the vessel in the event of an entanglement with the main line (a secondary attachment between the bird scaring line and the vessel can be used to attach the break-away bird-scaring line to the mainline for subsequent retrieval during the haul).

Minimum standards

Current minimum standards vary. CCAMLR was the first conservation body that required all longline vessels in its area of application to use bird scaring lines (CCAMLR 2018). The bird scaring (streamer) line has gone on to become the most commonly applied mitigation measure in longline fisheries worldwide (Melvin *et al*. 2004). CCAMLR currently prescribes a range of specifications relating to the design and use of bird scaring lines. These include the minimum length of the line (150 m), the height of the attachment point on the vessel (7 m above the water), and details about streamer lengths and intervals between streamers. Other fisheries have adapted these measures. Some, such as those in New Zealand and Alaska have set explicit standards for the aerial coverage of the bird scaring lines, which varies according to the size and speed of the vessel and the sink rates of baited longlines.

For small vessels (<24 m), we recognise that the length of aerial extent will vary by setting speed, with 75 m being achievable for vessels setting at ≥ 4 knots, or 50 m if setting at speeds < 4 knots, that streamers may be modified over the first 15 m to avoid tangling, and that drag may be achieved using either towed devices or longer in-water sections (Goad & Debski 2017).

Implementation monitoring

Bird scaring lines are usually deployed and retrieved before and after each set (they are not a fixed part of fishing gear/operations). On-board observers, electronic monitoring (cameras), at-sea surveillance or an electronic BSL compliance monitoring device (Ngcongo & Miranda 2024; https://imveloblue.co.za/electronic-monitoring-imvelo-bsl/) are options for required assessment of implementation.

Research needs

The use and specifications/performance standards are fairly well established in demersal longline fisheries. However, there is scope to improve further the effectiveness and practical use of bird scaring lines in individual fisheries and on individual vessels or vessel types.

Mitigation Fact Sheet

https://www.acap.aq/en/resources/bycatch-mitigation/mitigation-fact-sheets/1912-fs-01-demersal-longline-streamer-lines/file

6. Paired or multiple bird scaring lines

Scientific evidence for effectiveness in demersal longline fisheries

Proven and recommended mitigation method. Effectiveness is maximized when BSLs are paired and deployed so that they bracket sinking baited hook lines, and the aerial extents of the lines cover the area astern to where birds can no longer access baited hooks. Effectiveness is further increased when used in combination with other measures – e.g. night setting, appropriate weighting of line and offal management. Several studies have shown that the use of two or more BSLs is more effective at deterring birds from baited hooks than a single BSL (Melvin *et al.* 2001; Sullivan & Reid 2002; Melvin 2003; Melvin *et al.* 2004; Reid *et al.* 2004). The combination of paired BSLs and IW longlines is considered the most effective mitigation measure in demersal longline fisheries using single line systems (Dietrich *et al.* 2008).

Notes and Caveats

The likelihood of entanglement using two BSLs with gear is potentially increased compared to using a single BSL. Towing an effective device that keeps lines from crossing surface gear may improve compliance with this measure. Manual retrieval of paired or multiple BSLs requires more effort than a single BSL This can be overcome by using winches to retrieve lines.

Minimum standards

Current minimum standards vary across fisheries. In Alaskan demersal longline fisheries paired BSLs are required on larger vessels (≥16.8 m) and encouraged/recommended by CCAMLR, except in the French exclusive economic zone (CCAMLR Subarea 58.6 and Division 58.5.1), where paired BSLs have been compulsory since 2005. Paired BSLs have also been required in the Australian longline fisheries off Heard Island since 2003 (Dietrich *et al*. 2008).

Implementation monitoring

BSLs are typically deployed and retrieved before and after each set (they are not a fixed part of fishing gear/operations). Onboard monitoring or at-sea surveillance is required to assess implementation.

Research needs

Further trialling in fisheries which currently only use single BSLs.

Mitigation Fact Sheet

https://www.acap.aq/en/resources/bycatch-mitigation/mitigation-fact-sheets/1912-fs-01-demersal-longline-streamer-lines/file

7. Haul bird exclusion devices (BED)

Scientific evidence for effectiveness in demersal longline fisheries

Proven and recommended as a haul mitigation measure. BEDs must be used in combination with line setting mitigation measures – bird scaring lines, line weighting, night setting and offal management. The use of a BED can effectively reduce the incidence of birds becoming foul hooked when the line is being hauled (Brothers *et al.* 1999; Sullivan 2004; Otley *et al*. 2007; Reid *et al*. 2010). For small vessels (<20 m in length), where the application of mitigation devices requiring robust support structures and on-water sections can be challenging, the use of simple haul mitigation devices has been demonstrated to be both practical and effective at deterring birds from hauling points (Goad *et al*. 2023).

Notes and Caveats

Some species, such as the Black-browed Albatross *Thalassarche melanophris,* and Cape Petrel *Daption capense*, can become habituated to the curtain, so it is important to use it strategically – e.g. when there are high densities of birds around the hauling bay (Sullivan 2004).

Minimum standards

Standards are evolving. BEDs are required in high risk CCAMLR areas. The exact design is not specified, rather it is required that they fulfil two operational characteristics: 1) deter birds from flying into the area where the line is being hauled, and 2) prevent birds that are sitting on the surface from swimming into the hauling bay area. BEDs are required in some UK longline fisheries (A. Wolfaardt pers. comm.).

Implementation monitoring

BEDs are usually deployed and retrieved before and after each set (they are not a fixed part of fishing gear/operations). Onboard monitoring or at-sea surveillance is required to assess implementation.

Mitigation Fact Sheet

https://www.acap.aq/en/resources/bycatch-mitigation/mitigation-fact-sheets/1907-fs-12-demersal-pelagic-longline-haul-mitigation/file

OTHER CONSIDERATIONS

8. Hook size and shape

Scientific evidence for effectiveness in demersal longline fisheries

Unproven and not recommended as a primary mitigation measure. Must be used in combination with other mitigation measures – bird scaring lines, line weighting, night setting and offal management. Hook size was found to be an important determinant in seabird bycatch rates of Argentinean and Chilean longline vessels fishing in Subarea 48.3 in the 1995 season, with smaller hooks killing significantly more seabirds than larger hooks (Moreno *et al.* 1996).

Notes and Caveats

Other than the finding of Moreno *et al.* (1996), little or no work has been conducted to investigate the impact of hook design and shape on seabird bycatch levels.

Minimum standards

No global standard.

Implementation monitoring

Port inspection of all hooks on board considered adequate for monitoring implementation.

Research needs

Determine impact on seabird bycatch and on catch of target species.

9. Olfactory deterrents

Scientific evidence for effectiveness in demersal longline fisheries

Unproven, and not recommended as a mitigation measure at this time. Dripping shark liver oil on the sea surface behind vessels has been shown to effectively reduce the number of seabirds (restricted to burrow-nesting birds) attending vessels and diving for bait in New Zealand (Pierre & Norden 2006; Norden & Pierre 2007).

Notes and Caveats

The shark liver oil investigated did not deter albatrosses, giant petrels, or Cape petrels from vessels (Norden & Pierre 2007). The potential impact of releasing large amounts of concentrated fish oil into the marine environment is unknown, as is the potential for contaminating seabirds attending vessels. Seabirds may also become habituated to the deterrent (Pierre & Norden 2006).

Minimum standards

No standards established.

Implementation monitoring

Onboard monitoring or at-sea surveillance of line setting operations is required to assess implementation.

Research needs

Testing should be extended to candidate/suitable species of conservation concern, such as White-chinned Petrels *P. aequinoctialis* and Sooty Shearwaters *Ardenna grisea*. Research is also required to identify the key ingredients in the shark oil that are responsible for deterring seabirds, and the mechanism by which the birds are deterred. The potential "pollution" effects also need to be investigated.

10. Acoustic Deterrents

Scientific evidence for effectiveness in demersal longline fisheries

Unproven and not recommended. Published reports unavailable; however, anecdotal reports of using percussive sound as with an orchard cannon showed that birds initially disperse but quickly habituate; i.e., disperse and quickly return or ignore completely with continuous use (E. Melvin, pers comm.)

Minimum standards

Not Applicable.

Implementation monitoring

Not Applicable.

Research needs

Undefined

11. Strategic management of offal discharge

Scientific evidence for effectiveness in demersal longline fisheries

Not recommended as a primary mitigation measure. Some studies have shown that dumping homogenised offal (which is generally more easily available and thus attractive to seabirds than bait) during setting attracts birds away from the baited line to the side of the vessel where the offal is being discharged, and thus reduces bycatch of seabirds on the baited hooks (Cherel *et al*. 1996; Weimerskirch *et al*. 2000).

Notes and Caveats

Although strategic offal discharge has been shown to be effective at reducing seabird bycatch around Kerguelen Island, there are many risks associated with the practice. Offal discharge needs to be continued throughout the setting operation so as to ensure the birds do not move on to the baited hooks. This will only be possible in fisheries where line setting is short, and there is sufficient offal to sustain the discharge during the entire line-setting period. This measure also has the potential to foul hook birds if offal is discharged with hooks. It is crucial, then, that all offal is checked for hooks before being discharged. Given these risks, and the fact that the presence of offal is a critical factor affecting seabird numbers attending vessels, most fisheries management regimes require that no offal can be discharged during line setting, and that if discarding is necessary at other times it should take place on the side of the vessel opposite to where the lines are being hauled.

Minimum standards

In CCAMLR demersal longline fisheries, discharge of offal is prohibited during line setting. During line hauling, storage of waste is encouraged, and if discharged must be discharged on the opposite side of the vessel to the hauling bay. A system to remove fish hooks from offal and fish heads prior to discharge is required. Similar requirements are prescribed by other demersal longline fisheries (e.g. some UK, South African and New Zealand fisheries).

Implementation monitoring

Requires offal discharge practices and events to be monitored onboard.

Research needs

Further information needed on opportunities to manage offal more effectively – considering both practical aspects and seabird bycatch mitigation – in the short and long term.

12. Line-setter/shooter

Scientific evidence for effectiveness in demersal longline fisheries

Unproven and not recommended as a mitigation measure at this time. A line shooter delivers a baited longline to the surface of the water astern of the vessel slack. Less used in demersal long-line fisheries compared with pelagic longline fisheries; variation in the precise method of operation is cause of variation in efficacy. In Norway, no statistical differences were detected in catch rates of Northern Fulmars *Fulmarus glacialis* between sets with and without a line shooter (Løkkeborg & Robertson 2002; Løkkeborg 2003). In Alaska, use of a line shooter increased seabird bycatch due to the longline being suspended in the vessel's wake resulting in delayed sinking (Melvin *et. al*. 2001).

Notes and Caveats

Robertson *et al.* (2008c) found no significant difference between the sink rates of integrated weight longlines of single line vessels that were set with and without a line setter in the Ross Sea, and were doubtful that the use of line setters would lead to substantial reductions in interactions between seabirds and longlines. Unequivocal evidence of effectiveness in reducing seabird bycatch is lacking. Further refinement is needed.

Minimum standards

Not considered a mitigation measure at this time.

Research needs

Need to investigate whether refinement/modification of the device will be able to overcome the problem of propeller wash and ensure consistently rapid sink rates and significantly reduced seabird mortality.

Mitigation Fact Sheet (for pelagic longline fisheries)

https://www.acap.aq/en/resources/bycatch-mitigation/mitigation-fact-sheets/771-fs-11-pelagic-longline-bait-caster-and-line-shooter/file

13. Underwater setting funnel/chute

Scientific evidence for effectiveness in demersal longline fisheries

Unproven and not recommended as a mitigation measure at this time. An underwater setting funnel has been tested in demersal longline fisheries in Alaska, Norway and South Africa, with all studies showing a reduction in the mortality rate, although the extent of the reduction varied between studies (Løkkeborg 1998, 2001; Melvin *et al*. 2001; Ryan & Watkins 2002).

Notes and Caveats

Present design is mainly for a single line system. Results from studies to date have been inconsistent, likely due to the depth at which the device delivers the baited hooks and the diving ability of the seabirds in the fishing area studied. The pitch angles of the vessel, which are influenced by the loading of weight and sea conditions, affect the performance of the funnel (Løkkeborg 2001).

Minimum standards

Not yet established.

Implementation monitoring

Onboard monitoring or at-sea surveillance is required to assess implementation.

Research needs

Need to investigate improvements to the current design to increase the depth at which the line is set, especially during rough seas. Should also be tested with integrated weight lines to determine whether this improves bycatch reduction. Also need to investigate optimal use of device together with other mitigation measures (e.g. BSLs and weighted lines).

Mitigation Fact Sheet

https://www.acap.aq/en/resources/bycatch-mitigation/mitigation-fact-sheets/766-fs-06-demersal-longline-underwater-setting-chute/file

14. Underwater Line Setter

Scientific evidence for effectiveness in demersal fisheries

Unproven and not recommended as a mitigation measure at this time. A line setter was identified as a potential mitigation device in New Zealand inshore demersal longline fisheries, (Goad 2011). This line setter is an underwater setting device that involves running the hookline through a set of rollers towed behind the vessel at depth. Underwater line setting devices for demersal longline fisheries differ from those assessed for pelagic longline fisheries which involve a computer operated and hydraulically powered machine that deploys baited hooks individually underwater to a target depth.

Notes and Caveats

An initial prototype had been developed through a series of at-sea trials which were conducted during 2011. While these trials were encouraging, the issue of weights and floats fouling on the rollers require resolution (Goad 2011). A new prototype has been developed and refined in a flume tank (Baker and Frost 2013) for application in a range of demersal longline operations.

Minimum standards

Not considered a mitigation measure at this time.

Research needs

Resolution of mainline loss issues under flume tank conditions prior to further evaluation in at-sea trials.

15. Lasers

High Energy Lasers Strongly Discouraged

Scientific evidence for effectiveness in demersal longline fisheries

Available evidence shows that high energy lasers (Class 4 lasers, the highest class in terms of laser hazards) are ineffective at deterring seabirds from danger areas around fishing vessels (Melvin *et al.* 2016) and likely damage seabird visual systems with negative effects on foraging behaviour of laser exposed seabirds (Fernandez-Juricic, 2023).

Notes and Caveats

Concerns are ongoing regarding the safety (to both humans and birds) and efficacy of laser technology of unknown energy levels as a seabird bycatch mitigation tool, as they continue to be used currently in various fisheries. Available evidence shows that high energy lasers are no longer marketed for fishery applications. Currently, evidence is lacking on the possibility that lasers of lower energy levels delivered in different ways (scanning, blinking, wave-length, etc.) could be used safely and be effective in some applications.

Minimum standards

Not Applicable as strongly discouraged.

Need for combination

Not Applicable as strongly discouraged.

Implementation monitoring

Not Applicable as strongly discouraged.

Research needs

As high energy lasers continue to be used in some fisheries, we encourage reporting of the extent and output power levels of laser use by ACAP Parties, including any information on effectiveness, as well as bird welfare effects.

16. Mitigation measures to improve sink rates of baited hooks on floated longlines

Scientific evidence for effectiveness in demersal longline fisheries

Unproven and not recommended as a mitigation measure at this time. Demersal longline vessels that use floated gear (which incorporates subsurface floats on the mainline to raise the hooks off the seabed) are particularly susceptible to seabird bycatch, with one study reporting that albatrosses attacked floated longlines at rates ten times more than longlines without floats

(Gladics *et al.* 2017). The sink rate of the slowest sinking hooks, where seabird bycatch is most pronounced, is the key factor to consider when prescribing mitigation measures for demersal longline fisheries using floated gear. The slowest sink rates are associated with deployment of buoys in demersal fishing gear (Debski 2016). Increasing the length of buoy lines improves the sink rate (Debski 2016, Robertson et al 2021). Options to increase the sink rates of Merluza system gear include the use of longer float lines, equipping float lines with sinkers and the elimination of line tension astern. Limited trials in NZ found that through the use of dropper floats, together with manipulation of line weighting regimes and BSL configurations, improved sinking to depth within the aerial extent of BSLs can be achieved in small vessel floated demersal longline fisheries (Goad et al. 2024).

Notes and Caveats

Sink rate management tools (e.g. Plencner and Debski 2026) can be used by small vessel demersal longline fishers to both meet regulatory requirements for sink rate records and to assess and manage sink rates to reduce the risk to seabirds.

Minimum standards

No global standard.

Implementation monitoring

Onboard monitoring or at-sea surveillance is required to assess implementation.

Research needs

Further work is required to identify mitigation measures that increase the sink rate of baited hooks on floated longlines.

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ANNEXE 6. RÉSUMÉ DES CONSEILS DE BONNES PRATIQUES DE L'ACAP POUR LES PÊCHES À LA PALANGRE PÉLAGIQUE

Agreement on the Conservation of Albatrosses and Petrels

ACAP 2026 Summary Best Practice Advice for Reducing the Impact of Pelagic Longline Fisheries on Seabirds

Reviewed at the Fifteenth Meeting of the Advisory Committee
Swakopmund, Namibia, 1 – 5 June 2026

BEST PRACTICE MEASURES

ACAP recommends that the most effective way to reduce seabird bycatch in pelagic longline fisheries is to use the following three best practice measures **simultaneously: branch line weighting, night setting and bird scaring lines.** Alternatively, the use of an assessed hook-shielding device or underwater bait setting device is recommended. A hook-shielding device encases the point and barb of baited hooks until a prescribed depth or immersion time has been reached, and an underwater bait setting device deploys encapsulated baited hooks at the stern of the vessel releasing the baited hooks at a pre-determined depth. These devices are designed to release baited hooks at a depth beyond the diving range of most seabirds to avoid or minimise the risk of seabirds gaining access to the hook and becoming hooked during line setting.

The simultaneous use of the three ACAP recommended mitigation measures optimise seabird bycatch reduction in longline fisheries. All three recommended measures are demonstrated to be effective; however, each have limitations when used alone. There is a period of time when hooks are accessible to birds even when branch lines are weighted. Night setting used alone is less effective at reducing seabird bycatch for nocturnally active birds and during bright moon light conditions. Bird scaring lines used alone can rarely protect baited hooks beyond the aerial extent of the line. Consequently, the simultaneous use of the three ACAP recommended seabird bycatch mitigation measures compensate for these limitations.

1. Branch line weighting

Branch lines should be weighted to sink the baited hooks rapidly out of the diving range of feeding seabirds. Studies have demonstrated that branch line weighting where there is more mass closer to the hooks, sink most rapidly and consistently; thereby, dramatically reducing seabird attacks on baits and most likely reducing mortalities. Studies of a range of weighting regimes have shown no negative effect on target catch rates ; however, reduced catch rates have been reported for albacore tuna, with lighter weights placed close to the hook showing smaller effects Continued refinement of branch line weighting configurations (mass, number and position of weights and materials) with regard to effectively reducing seabird bycatch and safety concerns through controlled research and application in fisheries, is encouraged.

Increased weighting will shorten but not eliminate the distance behind the vessel in which birds can be caught. Branch line weighting has been shown to improve the effectiveness of other mitigation methods such as night setting and bird scaring lines, in reducing seabird bycatch. Priority should be accorded to branch line weighting, providing certain pre-conditions can be met, among other things: (a) weighting regime adequately specified; (b) safety issues adequately addressed; and (c) issues concerning application to artisanal fisheries being considered.

Best practice branch line weighting should achieve a sink rate of 0.5 m/s to 5 m depth. The following configurations have been demonstrated, under controlled conditions and with metal materials, to meet this standard:

- **(a)** 40 g or greater attached within 0.5 m of the hook; or
- **(b)** 60 g or greater attached within 1 m of the hook; or
- **(c)** 80 g or greater attached within 2 m of the hook.

When weighting is attached to, or integrated into the hook, a minimum of total weight of 50 g is sufficient to achieve a sink rate of 0.5 m/s to 5 m depth. Branch line weighting is integral to the fishing gear and, compared to bird scaring lines and night setting, has the advantage of being more consistently implemented, hence facilitating compliance and port monitoring. It is recommended to avoid the use of lead when the lead may be ingested (e.g. attached to or integrated into the hook). The use of lighting devices or other fishing accessories as weights is not recommended unless they achieve the sink rate criterion.

2. Night setting

Setting longlines at night (defined as the time between the end of nautical twilight and before nautical dawn as set out in the Nautical Almanac tables for relevant latitude, local time and date) is highly effective at reducing incidental mortality of seabirds because the majority of vulnerable seabirds are inactive at night. However, night setting is not as effective for crepuscular/ nocturnal foragers (e.g. White-chinned Petrels *Procellaria aequinoctialis*). The effectiveness of this measure may be reduced during bright moonlight and when using intense deck lights, and is less practical in high latitudes during summer, when the time between nautical dusk and dawn is limited.

Night setting is recognised as consistently defined, widely reflected in conservation and management measures and has benefit as a primary mitigation measure, as it has the potential for compliance monitoring through VMS and other tools.

3. Bird scaring lines (BSLs)

Properly designed and deployed bird scaring lines (BSLs) deter birds from sinking baits, dramatically reducing seabird attacks and related mortalities. A bird scaring line runs from a high point at the stern to a device or mechanism that creates drag at its terminus. Brightly coloured streamers hanging from the aerial extent of the line scare birds from flying to and under the line, preventing them from reaching the baited hooks.

BSLs should be the lightest practical strong fine line. Lines should be attached to the vessel with a barrel swivel to minimise rotation of the line from torque created as it is dragged behind the vessel. Long streamers should be attached with a swivel to prevent them from rolling up onto the BSL. Towed objects should be attached at the terminus of the BSL to increase drag. BSLs are at risk of tangling with float lines leading to lost bird scaring lines, interruptions in vessel operations and in some cases lost fishing gear. Alternatives, such as adding short streamers to the in-water portion of the line, can enhance drag while minimising tangles with float lines. Weak links (breakaways) should be incorporated into the in-water portion of the line for safety reasons and to minimize operational problems associated with lines becoming tangled.

It is recommended to use a weak link to allow the BSL to break-away from the vessel in the event of a tangle with the main line, and, a secondary attachment between the bird scaring line and the vessel to allow the tangled BSL to be subsequently attached to mainline and recovered during the haul.

Sufficient drag must be created to maximise aerial extent and maintain the line directly behind the vessel during crosswinds. To avoid tangling, this is best achieved using a long in-water section of rope or monofilament.

Given operational differences in pelagic longline fisheries due to vessel size and gear type, bird scaring lines specifications have been divided into recommendations for vessels greater than 35 metres and those less than 35 metres in length.

3. a) Recommendations for vessels ≥35 m total length

Simultaneous use of two BSLs, one on each side of the sinking longline, provides maximum protection from bird attacks under different wind conditions. The setup for BSLs should be as follows:

- BSLs should be deployed to maximise the aerial extent, which is a function of vessel speed, height of the attachment point to the vessel, drag, and weight of bird scaring line materials.
- To achieve a minimum recommended aerial extent of 100 m, BSLs should be attached to the vessel such that they are suspended from a point a minimum of 8 m above the water at the stern.
- BSLs should contain a mix of brightly coloured long and short streamers placed at intervals of no more than 5 m. Long streamers should be attached to the line with swivels to prevent streamers from wrapping around the line. All long streamers should reach the sea-surface in calm conditions.
- Baited hooks should be deployed within the area bounded by the two BSLs. If using bait-casting machines, they should be adjusted so as to land baited hooks within the area bounded by the BSLs.

If large vessels use only one BSL, it should be deployed windward of the sinking baits. If baited hooks are set outboard of the wake, the BSL attachment point to the vessel should be positioned several metres outboard of the side of the vessel that baits are deployed.

3. b) Recommendations for vessels <35 m total length

Two designs have been shown to be effective:

1. a design with a mix of long and short streamers, that includes long streamers placed at 5 m intervals over at least the first 55 m of the BSL. Streamers may be modified over the first 15 m to avoid tangling, and

2. a design that does not include long streamers. Short streamers (no less than 1 m in length) should be placed at 1 m intervals along the length of the aerial extent.

In all cases, streamers should be brightly coloured. To achieve a minimum recommended aerial extent of 75 m, BSLs should be attached to the vessel such that they are suspended from a point a minimum of 6 m above the water at the stern.

4. Hook-shielding devices

Hook-shielding devices encase the point and barb of baited hooks to prevent seabird attacks during line setting until a prescribed depth is reached (a minimum of 10 metres), or until after a minimum period of immersion has occurred (a minimum of 10 minutes) that ensures that baited hooks are released beyond the foraging depth of most seabirds. The following performance requirements are used by ACAP to assess the efficacy of hook-shielding devices in reducing seabird bycatch:

(a) the device shields the hook until a prescribed depth of 10 m or immersion time of 10 minutes is reached;

(b) the device meets current recommended minimum standards for branch line weighting described in Section 1; and

(c) experimental research has been undertaken to allow assessment of the effectiveness, efficiency and practicality of the technology against the ACAP best practice seabird bycatch mitigation criteria developed for assessing and recommending best practice advice on seabird bycatch mitigation measures.

Devices assessed as having met the performance requirements listed above will be considered best practice. At this time, the following devices have been assessed as meeting these performance requirements and are therefore considered to represent best practice:

1. '**Hookpod-LED**' – 68 g minimum weight that is positioned at the hook, encapsulating the barb and point of the hook during setting, and remains attached until it reaches 10 m in depth, when the hook is released (Barrington 2016a, Sullivan *et al*. 2018).

2. **'Hookpod-mini'** – 48 g minimum weight that is positioned at the hook, encapsulating the barb and point of the hook during setting, and remains attached until it reaches 10 m in depth, when the hook is released (Goad *et al.* 2019, Gianuca *et al.* 2021, Sullivan & Barrington 2021).

3. '**Smart Tuna Hook**' – 40 g minimum weight that is positioned at the hook, encapsulating the barb and point of the hook during setting, and remains attached for a minimum period of 10 minutes after setting, when the hook is released (Baker *et al*. 2016, Barrington 2016b). Not commercially available as of May 2026.

The assessment of these devices as best practice is conditional on continuing to meet the above performance requirements.

5. Underwater Bait Setting devices

Underwater Bait Setting devices deploy baited hooks at a pre-determined depth immediately at the stern of the vessel. Underwater Bait Setting devices deploy baited hooks individually underwater down a track fitted to the fishing vessel's transom enclosed in a capsule or similar device to eliminate any visual stimulus for seabirds following the vessel. The capsule is pulled quickly underwater to a predetermined target depth that can be adjusted in response to the dive capabilities of seabirds attending the vessel during line setting to prevent interactions. The following performance requirements are used by ACAP to assess the efficacy of underwater bait setting devices in reducing seabird bycatch:

(a) the device deploys encapsulated hooks in a vertical manner at the stern of the vessel until a minimum prescribed depth of 5 m is reached;

(b) branch lines meet current recommended minimum standards for branch line weighting described in Section 1; and

(c) experimental research has been undertaken to allow assessment of the effectiveness, efficiency and practicality of the technology against the ACAP best practice seabird bycatch mitigation criteria developed for assessing and recommending best practice advice on seabird bycatch mitigation measures.

Devices assessed as having met the performance requirements listed above will be considered best practice. At this time, the following device has been assessed as meeting these performance requirements and is therefore considered to represent best practice:

1. **'Underwater Bait Setter (Skadia Technologies)'** – a computer operated and hydraulically powered machine that deploys baited hooks individually underwater in a capsule, and where recommended minimum standards for branch line weighting are met. The capsule is pulled down a removable track fitted to the vessel's transom and then catapulted to a target depth. The capsule descends along the track at 6 $m.sec^{-1}$ and thereafter at ≥3 $m.sec^{-1}$ (Robertson *et al.* 2015, Robertson *et al.* 2018, Barrington 2021).

The assessment of an Underwater Bait Setting device as best practice is conditional on the device continuing to meet the above performance requirements.

6. Time-Area fishery closures

The temporary closure of important seabird foraging areas (e.g. areas adjacent to important seabird colonies during the breeding season or highly productive waters when large numbers of aggressively feeding seabirds are present) to fishing will eliminate incidental mortality of seabirds in that area.

ACAP's Review of Seabird Bycatch Mitigation Measures for Pelagic Longline Fisheries provides further information on all of these methods, as well as other considerations.

MITIGATION MEASURES THAT ARE NOT RECOMMENDED

ACAP considers that the following measures lack scientific substantiation as technologies or procedures for reducing the impact of pelagic longlines on seabirds.

Line shooters: No evidence of effectiveness in pelagic longline fisheries.

Olfactory deterrents: No evidence of effectiveness in pelagic longline fisheries.

Blue dyed bait: No evidence of effectiveness in pelagic longline fisheries. Insufficiently researched.

Bait thaw status: No evidence that the thaw status of baits has any effect on the sink rate of baited hooks set on weighted lines.

Laser technology: There is currently no evidence of effectiveness, and serious concerns remain regarding the potential impacts on the health of individual birds.

ANNEXE 7. EXAMEN PAR L'ACAP DES MESURES D'ATTÉNUATION DES CAPTURES ACCESSOIRES D'OISEAUX MARINS DANS LA PÊCHE À LA PALANGRE PÉLAGIQUE

Agreement on the Conservation of Albatrosses and Petrels

ACAP 2026 Review of Seabird Bycatch Mitigation Measures for Pelagic Longline Fisheries

Reviewed at the Fifteenth Meeting of the Advisory Committee
Swakopmund, Namibia, 1 – 5 June 2026

INTRODUCTION

The incidental mortality of seabirds in pelagic longline fisheries continues to be a serious global concern, especially for threatened albatrosses and petrels. The need for international cooperation in addressing this concern was a major reason for establishing the Agreement on the Conservation of Albatrosses and Petrels (ACAP). In pelagic longline fisheries seabirds are killed when they become hooked or entangled and drowned while foraging for baits on longline hooks as the gear is deployed. Seabirds can also be hooked or entangled as the gear is hauled; however, many of these seabirds can be released alive with careful handling.

A range of technical and operational mitigation methods have been designed or adapted for use in pelagic longline fisheries to reduce incidental mortality of seabirds. Operationally, peak areas and periods of seabird foraging activity should be avoided. Effective technical methods include actively deterring birds from, and minimising the visibility of, baited hooks. Vessels need to be made less attractive to birds, and the distance astern and time baited hooks are available to birds should be reduced. Mitigation methods need to be easy and safe to implement, cost effective, enforceable and should not reduce catch rates of target species or increase the bycatch rates of other protected species.

The feasibility, effectiveness and specifications of mitigation measures may vary by area, seabird assemblage, fishery, vessel size, and gear configuration. Some of the mitigation methods are well established and explicitly prescribed in pelagic longline fisheries; however, additional measures are undergoing further testing and refinements.

The Seabird Bycatch Working Group (SBWG) of ACAP has comprehensively reviewed the scientific literature dealing with seabird bycatch mitigation in pelagic fisheries and this document is a distillation of that review. Currently, simultaneous use of weighted branch lines, bird scaring lines and night setting, or use of one of the assessed hook-shielding and underwater bait setting devices, is considered best practice mitigation for reducing seabird bycatch in pelagic longline fisheries. Three hook-shielding devices (the 'Hookpod-LED', the 'Hookpod-mini' and the 'Smart Tuna Hook') and one underwater bait setting device (the 'Underwater Bait Setter (Skadia Technologies)') have been assessed.

THE ACAP REVIEW PROCESS

At each of its meetings, the ACAP SBWG considers any new research or information pertaining to seabird bycatch mitigation in pelagic longline fisheries. The following criteria are used by ACAP to guide the assessment process, and to determine whether a particular fishing technology or measure can be considered best practice to reduce the incidental mortality of albatrosses and petrels in fishing operations.

Best Practice Seabird Bycatch Mitigation Criteria and Definition

i. Individual fishing technologies and techniques should be selected from those shown by experimental research to significantly[10] reduce the rate of seabird incidental mortality[11] to the lowest achievable levels. Experimental research yields definitive results when performance of candidate mitigation technologies is compared to a control (no deterrent), or to status quo in the fishery. When testing relative performance of

[10] Any use of the word 'significant' in this document is meant in the statistical context

[11] This may be determined by either a direct reduction in seabird mortality or by reduction in seabird attack rates, as a proxy

mitigation approaches, analysis of fishery observer data can be plagued with a myriad of confounding factors. Where a significant relationship is demonstrated between seabird behaviour and seabird mortality in a particular system or seabird assemblage, significant reductions in seabird behaviours, such as the rate of seabirds attacking baited hooks, can serve as a proxy for reduced seabird mortality. Ideally, where simultaneous use of fishing technologies and practices is recommended as best practice, research should demonstrate significantly improved performance of the combined measures.

ii. Fishing technologies and techniques, or a combination thereof, should have clear and proven specifications and minimum performance standards for their deployment and use. Examples would include: specific bird scaring line designs (lengths, streamer length and materials; etc.), number (one vs. two) and deployment specifications (such as aerial extent and timing of deployment); night fishing defined by the time between the end of nautical dusk and start of nautical dawn; and, line weighting configurations specifying mass and placement of weights or weighted sections.

iii. Fishing technologies and techniques should be demonstrated to be practical, cost effective and widely available. Commercial fishing operators are likely to select for seabird bycatch reduction measures and devices that meet these criteria including practical aspects concerning safe fishing practices at sea.

iv. Fishing technologies and techniques should, to the extent practicable, maintain catch rates of target species. This approach should increase the likelihood of acceptance and compliance by fishers.

v. Fishing technologies and techniques should, to the extent practicable not increase the bycatch of other taxa. For example, measures that increase the likelihood of catching other protected species such as sea turtles, sharks and marine mammals, should not be considered best practice (or only so in exceptional circumstances).

vi. Minimum performance standards and methods of ensuring compliance should be provided for fishing technologies and techniques, and clearly specified in fishery regulations. Relatively simple methods to check compliance should include, but not be limited to, port inspections of branch lines to determine compliance with branch line weighting, determination of the presence of davits (tori poles) to support bird scaring lines, and inspections of bird scaring lines for conformance with design requirements. Compliance monitoring and reporting should be a high priority for enforcement authorities.

On the basis of these criteria, the scientific evidence for the effectiveness of mitigation measures or fishing technologies/techniques in reducing seabird bycatch is assessed, and explicit information is provided on whether the measure is recommended as being effective, and thus considered best practice, or not. The ACAP review also indicates whether the measure needs to be combined with additional measures, and provides notes and caveats for each measure, together with information on performance standards and further research needs. Following each meeting of ACAP's SBWG and Advisory Committee, this review document and ACAP's best practice advice, is updated (if required). A summary of ACAP's current best practice advice is provided in the preceding section of this document.

SEABIRD BYCATCH MITIGATION FACT SHEETS

A series of seabird bycatch mitigation fact sheets have been developed by ACAP and BirdLife International to provide practical information, including illustrations, on seabird bycatch mitigation measures (https://www.acap.aq/resources/bycatch-mitigation/mitigation-fact-sheets). The sheets, which include information on the effectiveness of the specific measure, their limitations and strengths and best practice recommendations for their effective adoption, are linked to the ACAP review process, and are updated following ACAP reviews. Links to the available fact sheets are provided in the relevant sections below. The mitigation fact sheets are currently available in English, French, Spanish, Portuguese, Japanese, Korean, Simplified Chinese, Traditional Chinese, and Indonesian.

BEST PRACTICE MEASURES

1. Branch line weighting

Scientific evidence for effectiveness in pelagic fisheries

Proven and recommended mitigation method. Should be used in combination with night setting and bird scaring lines (Brothers 1991; Boggs 2001; Sakai *et al*. 2001; Brothers *et al*. 2001; Anderson & McArdle 2002; Hu *et al*. 2005; Melvin *et al*. 2013; 2014, Jiménez *et al*. 2017; 2019; Santos *et al*. 2019; Gilman et al. 2025: Huang et al. 2025; Lee et al. 2026).

Notes and Caveats

Branch lines should be weighted to sink the baited hooks rapidly out of the diving range of feeding seabirds. Studies have demonstrated that branch line weighting where there is more mass closer to the hooks, results in hooks sinking most rapidly and consistently (Gianuca *et al*. 2011; Robertson *et al*. 2010a; 2013; Barrington *et al*. 2016), and reduces seabird attacks on baits (Gianuca *et al*. 2011; Ochi *et al*. 2013; Jiménez *et al*. 2019) as well as seabird mortalities (Jiménez *et al*. 2017; 2019; Santos *et al*. 2019). Studies of a range of weighting regimes have shown no negative effect on target catch rates (Jiménez *et al*. 2013; 2017; 2019; Robertson *et al*. 2013; Gianuca *et al*. 2013; Santos *et al.* 2019). However, recent studies have detected a decrease in albacore tuna (*Thunnus alalunga*) catch rates in weighted branch lines compared to unweighted branch lines (Huang et al. 2025; Lee et al. 2026), which warrants further investigation (Lee et al. 2026). The lightest weights (40–45 g) attached as close as possible to the hook were found to have the smallest impact on catch rates of this species. In addition, an experimental weighted fishing hook, with a mass of 32 g added to the shank of the hook, showed a decrease in the catch rates of pooled retained species (Gilman *et al.* 2022).

Increased weighting will shorten but not eliminate the distance behind the vessel in which birds can be caught. Branch line weighting has been shown to improve the effectiveness of other mitigation methods such as night setting and bird scaring lines, in reducing seabird bycatch (Brothers 1991; Boggs 2001; Sakai *et al*. 2001; Anderson & McArdle 2002; Gilman *et al.* 2003a, Hu *et al*. 2005; Melvin *et al*. 2013; 2014: Huang et al. 2025). Achieving faster sink rates may be needed to effectively mitigate seabird bycatch in areas with deep diving petrels (Düssler *et al*. 2026). Branch line weighting is integral to the fishing gear and, compared to bird scaring lines and night setting, has the advantage of being more consistently implemented, hence facilitating compliance and port monitoring. On this basis it is important to enhance the priority accorded to branch line weighting, providing certain pre-conditions can be met, among other things: (a) that the weighting regime is adequately specified; and (b) safety issues are adequately addressed.

Measurement of sink rates should be undertaken using the ACAP Guidelines to Measure Sink Rates of Baited Hooks in Pelagic Longline Fisheries.

Minimum standards

On the basis of sink-rate data (Barrington *et al*. 2016) and seabird attack and bycatch rates (Gianuca *et al*. 2011; Jiménez *et al*. 2019; Santos *et al*. 2019), best practice branch line weighting should achieve a sink rate of 0.5m/s to 5 m depth. The following configurations have been demonstrated, under controlled conditions and with metal materials, to meet this standard

- **(a)** 40 g or greater attached within 0.5 m of the hook;
- **(b)** 60 g or greater attached within 1 m of the hook;
- **(c)** 80 g or greater attached within 2 m of the hook.

When weighting is attached to, or integrated into the hook, a minimum of total weight of 50 g is sufficient to achieve a sink rate of 0.5 m/s to 5 m depth. Branch line weighting is integral to the fishing gear and, compared to bird scaring lines and night setting, has the advantage of being more consistently implemented, hence facilitating compliance and port monitoring. It is recommended to avoid the use of lead when the lead may be ingested (e.g. attached to or integrated into the hook). The use of lighting devices or other fishing accessories as weights is not recommended (Gianuca et al. 2016; Brothers 2026) unless they achieve the sink rate criterion.

Need for combination

Should be combined with bird scaring lines and night setting. There is a period of time when hooks are accessible to birds even when branch lines are weighted.

Implementation monitoring

Vessels carrying out short fishing trips (lasting up to a few weeks): Line weights crimped into branch lines are very difficult to remove at sea. Inspection before departure from port of all gear bins on vessels is therefore considered an acceptable form of implementation monitoring.

Vessels carrying out long fishing trips (lasting months): It is possible to remove and/or re-configure gear at sea. Consequently, implementation monitoring requires using appropriate methods (e.g., observer inspection of line setting operations; video surveillance; at-sea compliance checks). Video surveillance may be possible, subject to the mainline setter being fitted with motion sensors to trigger cameras.

Research needs

Continued refinement of branch line weighting configurations (mass, number and position of weights and materials) with regard to effectively reducing seabird bycatch and safety concerns, through controlled research and application in fisheries, is encouraged. Improving branch line weighting for high seas fisheries, with hook sink rates consistent with ACAP's Best Practice advice on branch line weighting, remains as a research priority. Studies should also include evaluations of the effects of branch line weighting on the catch rate of target and bycatch species and provide data that allow evaluation of the relative safety and practicality attributes of various weighting configurations.

Mitigation Fact Sheet

https://www.acap.aq/bycatch-mitigation/bycatch-mitigation-fact-sheets

2. Night setting

Scientific evidence for effectiveness in pelagic fisheries

Proven and recommended mitigation method. Should be used in combination with weighted branch lines and bird scaring lines (Duckworth 1995; Gales *et al.* 1998; Klaer & Polacheck 1998; Brothers *et al*. 1999; McNamara *et al*. 1999; Gilman *et al*. 2005; 2023; Baker & Wise 2005; Jiménez *et al*. 2009; 2014; 2020; Melvin *et al*. 2013; 2014; Rollinson *et al*. 2016; Rollinson 2017; Melvin *et al.* 2023, Meyer & MacKenzie 2022; Huang et al. 2025).

Notes and Caveats

Setting longlines at night (defined as the time between the end of nautical twilight and before nautical dawn as set out in the Nautical Almanac tables for relevant latitude, local time and date) is highly effective at reducing incidental mortality of seabirds because the majority of vulnerable seabirds are inactive at night. For example, a Pacific Ocean albacore tuna longline fishery had dramatically lower albatross bycatch rates when making sets completely at night compared to sets made partially in the daytime, with no reduction in the target species catch rate (Gilman *et al*. 2023). Night setting is not as effective for crepuscular/ nocturnal foragers (e.g. White-chinned Petrels *Procellaria aequinoctialis*). Consequently, night setting should be used in combination with branch line weighting and bird scaring lines (Klaer & Polacheck 1998; Brothers *et al*. 1999; McNamara *et al*. 1999; Gilman *et al*. 2005; Baker & Wise 2005; Jiménez *et al*. 2009; 2014; 2020; Melvin *et al*. 2013; 2014). The effectiveness of this measure may be reduced during bright moonlight and when using intense deck lights, and is less practical in high latitudes during summer, when the time between nautical dusk and dawn is limited.

Minimum standards

No setting should take place between nautical dawn and nautical dusk. Nautical dawn and nautical dusk are defined as set out in the Nautical Almanac tables for relevant latitude, local time and date. Setting longlines across night and day does not represent night setting: either when setting commences at night and finishes after the nautical dawn, or when setting commences prior to the nautical dusk and continues into the night.

Need for combination

Should be used in combination with bird scaring lines and branch line weighting. Night setting used alone is less effective at reducing seabird bycatch for nocturnally active birds and during bright moon light conditions.

Implementation monitoring

Requires Vessel Monitoring Systems (VMS) or fishery observers. Vessel speed and direction vary between transiting, line setting, line hauling and when vessels are stationary on fishing grounds. VMS-derived assessment of vessel activity in relation to time of nautical dawn and dusk are considered acceptable for implementation monitoring. Alternatively, VMS-linked sensors fitted to mainline setting and hauling drum could be used to indicate compliance, as could sensors to trigger video surveillance cameras. This facility is currently unavailable and requires development.

Research needs

Assessing the effectiveness of bird scaring lines and branch line weighting at night needs to be determined, possibly by way of using thermal or night vision technologies.

Mitigation Fact Sheet

https://www.acap.aq/en/bycatch-mitigation/bycatch-mitigation-fact-sheets/1824-fs-05-demersal-pelagic-longline-night-setting/file

3.a Bird scaring lines for vessels ≥35 m in total length

Scientific evidence for effectiveness in pelagic fisheries

Proven and recommended mitigation method. Should be used in combination with branch lines weighting and night setting. (Imber 1994; Uozumi & Takeuchi 1998; Brothers *et al.* 1999; Klaer & Polacheck 1998; McNamara *et al.* 1999; Boggs 2001; CCAMLR 2002; Minami & Kiyota 2004; Melvin 2003; Rollinson *et al*. 2016; Rollinson 2017). For vessels ≥35 m in length, the use of two bird scaring lines (BSLs) is considered best practice. BSLs with the appropriate aerial extent can be more easily rigged on large vessels. Two BSLs are considered to provide better protection of baited hooks in crosswinds than single BSLs (Melvin *et al*. 2004; 2013; 2014; Sato *et al*. 2013). Hybrid BSLs (with long and short streamers) are more effective than BSLs with short streamers only in deterring diving seabirds (e.g. White-chinned Petrels *Procellaria aequinoctialis*, Melvin et *al*. 2010; 2013; 2014).

Notes and Caveats

Properly designed and deployed BSLs deter birds from sinking baits, dramatically reducing seabird attacks and related mortalities. A bird scaring line runs from a high point at the stern to a device or mechanism that creates drag at its terminus. Brightly coloured streamers hanging from the aerial extent of the line scare birds from flying to and under the line, preventing them from reaching the baited hooks. It is important to note that the BSLs only provide protection to the baited hooks within the area protected by its aerial extent. This is why it is particularly important to use BSLs in combination with branch line weighting (and night setting), which ensure that the baited hooks have sunk beneath the diving depth of most seabirds beyond the aerial extent of the BSLs. The presence of diving species increases the vulnerability of surface foragers (e.g., albatrosses) due to secondary interactions (i.e. albatrosses attacking baited hooks that are brought back to the surface by diving birds).

BSLs should be the lightest practical strong fine line. Lines should be attached to the vessel with a barrel swivel to minimise rotation of the line from torque created as it is dragged behind the vessel. Long streamers should be attached with a swivel to prevent them from rolling up onto the BSL. BSLs are at risk of tangling with float lines leading to lost BSLs, interruptions in vessel operations and in some cases lost fishing gear.

BSLs potentially increase the likelihood of entanglements, particularly if the attachment points on davits (tori poles) are insufficiently outboard of vessels. To achieve a minimum aerial extent BSLs should be attached to the vessel such that it is suspended from a point a minimum of 8 m above the water at the stern. Attaching towed objects to the terminus of the in-water extent of bird scaring lines to increase drag has proven problematic in pelagic longline fisheries, as float lines tend to tangle with bird scaring lines. For this reason, the addition of short streamers woven into the in-water extent of the bird scaring line or lengthening or increasing the diameter of the in-water extent, are encouraged to increased drag while minimizing tangles. Weak links (breakaways) should be incorporated into the in-water portion of the line for safety reasons and to minimize operational problems associated with lines becoming tangled.

Minimum standards

Simultaneous use of two BSLs, one on each side of the sinking longline, provides maximum protection from bird attacks under different wind conditions (Melvin *et al.* 2004; 2013; 2014; Sato *et al*. 2013). The setup for BSLs should be as follows:

- BSLs should be deployed to maximise the aerial extent, which is a function of vessel speed, height of the attachment point to the vessel, drag, and weight of bird scaring line materials.
- To achieve a minimum recommended aerial extent of 100 m, BSLs should be attached to the vessel such that they are suspended from a point a minimum of 8 m above the water at the stern.
- BSLs should contain a mix of brightly coloured long and short streamers placed at intervals of no more than 5 m. Long streamers should be attached to the line in a way that prevent streamers from wrapping around the line (e.g. using unweighted swivels). All long streamers should reach the sea-surface in calm conditions.
- Baited hooks should be deployed within the area bounded by the two BSLs. If using bait-casting machines, they should be adjusted so as to land baited hooks within the area bounded by the BSLs.

If large vessels use only one BSL, it should be deployed windward of the sinking baits. If baited hooks are set outboard of the wake, the BSL attachment point to the vessel should be positioned several meters outboard of the side of the vessel that baits are deployed.

Need for combination

Should be used in combination with appropriate branch line weighting and night setting. BSLs used alone can rarely protect baited hooks beyond the aerial extent of the line.

Implementation monitoring

On-board observers, electronic monitoring (cameras), at-sea surveillance or an electronic BSL compliance monitoring device (Ngcongo & Miranda 2024; https://imveloblue.co.za/electronic-monitoring-imvelo-bsl/).

Research needs

Developing methods that minimise entanglements of the in-water portion of BSLs with longline floats remains the highest priority for research on bird-scaring lines. Other research priorities include: (1) evaluating the effectiveness of one vs. two BSLs; and, (2) BSLs design features including streamer lengths, configurations and materials.

Mitigation Fact Sheet

https://www.acap.aq/en/bycatch-mitigation/bycatch-mitigation-fact-sheets/1497-fs-07a-pelagic-longline-streamer-lines-vessels-35-m/file

3.b Bird scaring lines for vessels <35m in total length

Scientific evidence for effectiveness in pelagic fisheries

Proven and recommended mitigation method. For vessels <35 m in length, a single BSL in combination with night setting and appropriate branch line weighting, has been found to be effective for mixed and short BSLs (ATF 2011; Domingo *et al.* 2017*,* Gianuca *et al.* 2011, Meyer & MacKenzie 2022).

Notes and Caveats

Vessels <35 m total length should deploy BSLs with a minimum aerial extent of 75 m. To achieve this minimum aerial extent, BSLs should be attached to the vessel such that it is suspended from a point a minimum of 6 m above the water at the stern. Sufficient drag must be created to maximise aerial extent and maintain the line directly behind the vessel during crosswinds. This may be achieved using either towed devices or longer in-water sections (Goad & Debski 2017). Diving species increase vulnerability of surface foragers (albatrosses) due to secondary interactions.

Minimum standards

To achieve a minimum recommended aerial extent of 75 m, BSLs should be attached to the vessel such that they are suspended from a point a minimum of 6 m above the water at the stern. Short streamers (>1 m) should be placed at 1 m intervals along the length of the aerial extent. Two designs have been shown to be effective:

(i) a mixed design that includes long and short streamers. Long streamers should be placed at 5 m intervals over at least the first 55 m of the BSL (Domingo *et al*. 2017). Streamers may be modified over the first 15 m to avoid tangling (Goad & Debski 2017); and,

(ii) a design that only includes short streamers. In all cases, BSLs should be brightly coloured and the lightest practical strong fine line. Lines should be attached to the vessel with a barrel swivel to minimise rotation of the line from torque (created as it is dragged behind the vessel).

Sufficient drag must be created to maximise aerial extent and maintain the line directly behind the vessel during crosswinds. To avoid tangling, this is best achieved using a long in-water section of rope or monofilament. Alternatively, short streamers can be tied into the line to 'bristle' the line (creating a bottlebrush like configuration) to generate drag while minimising the chance of fouling streamer lines on float lines.

To minimise safety and operational problems it is recommended to use a weak link to allow the bird scaring line to break-away from the vessel in the event of a tangle with the main line, and, a secondary attachment between the bird scaring line and the vessel to allow the tangled bird scaring line to be subsequently attached to mainline and recovered during the haul (Goad & Debski 2017).

Need for combination

Should be used with appropriate branch line weighting and night setting. BSLs used alone can rarely protect baited hooks beyond the aerial extent of the line.

Implementation monitoring

On-board observers, electronic monitoring (cameras), at-sea surveillance or an electronic BSL compliance monitoring device (Ngcongo & Miranda 2024; https://imveloblue.co.za/electronic-monitoring-imvelo-bsl/).

Research needs

Developing methods that minimise entanglements of the in-water portion of BSLs with longline floats remains the highest priority for research on bird-scaring lines. Other research priorities include: (i) evaluating the effectiveness of one vs. two BSL, (ii) BSL design features including steamer lengths, configurations and materials, especially for very small vessels.

Mitigation Fact Sheet

https://www.acap.aq/en/bycatch-mitigation/bycatch-mitigation-fact-sheets/1867-fs-07b-pelagic-longline-streamer-lines-vessels-less-than-35-m/file

4. Hook-shielding devices

Scientific evidence for effectiveness in pelagic longline fisheries

Proven and recommended mitigation method. Hook-shielding devices encase the point and barb of baited hooks to prevent seabird attacks during line setting until a prescribed depth is reached (a minimum of 10 meters), or until after a minimum period of immersion has occurred (a minimum of 10 minutes) that ensures that baited hooks are released beyond the foraging depth of most seabirds. The following performance requirements are used by ACAP to assess the efficacy of hook-shielding devices in reducing seabird bycatch:

(a) the device shields the hook until a prescribed depth of 10 m or immersion time of 10 minutes is reached

(b) the device meets current recommended minimum standards for branch line weighting described in Section 1

(c) experimental research has been undertaken to allow assessment of the effectiveness, efficiency and practicality of the technology against the ACAP best practice seabird bycatch mitigation criteria developed for assessing and recommending best practice advice on seabird bycatch mitigation measures

At this time, the 'Hookpod-LED' (Sullivan *et al*. 2018, Barrington 2016a), 'Hookpod-mini' (Goad *et al.* 2019, Gianuca *et al.* 2021, Sullivan & Barrington 2021) and the 'Smart Tuna Hook' (Baker *et al*. 2016, Barrington 2016b) have been assessed as having met the performance requirements and are therefore considered to represent best practice.

Notes and Caveats

The assessment of these three devices as best practice is conditional on continuing to meet the above performance requirements.

Deeper opening devices may be needed to effectively mitigate seabird bycatch in areas with deep diving petrels (Düssler et al 2026).

Minimum standards

'Hookpod-LED' – 68 g minimum weight that is positioned at the hook, encapsulating the barb and point of the hook during setting, and remains attached until it reaches 10 m in depth, when the hook is released.

'Hookpod-mini' – 48 g minimum weight that is positioned at the hook, encapsulating the barb and point of the hook during setting, and remains attached until it reaches 10 m in depth, when the hook is released.

'Smart Tuna Hook' – 40 g minimum weight that is positioned at the hook, encapsulating the barb and point of the hook during setting, and remains attached for a minimum period of 10 minutes after setting, when the hook is released. Not currently commercially available as of May 2026.

Need for combination

Both of these assessed hook-shielding devices have been designed as stand-alone measures that do not need to be combined with other mitigation measures. However, it is useful to note that they integrate two performance components: i) protecting and ii) increasing the sink rate of the baited hooks to reduce the opportunities for seabirds to access them.

Implementation monitoring

A combination of port-based inspections and vessel-based monitoring and surveillance (e.g. observer inspection of line setting operations; video surveillance; at-sea compliance checks) will be required to assess use and compliance.

Research needs

Conduct further field research to evaluate the relative contributions of the sink rates and hook protection components of hook-shielding devices in reducing seabird bycatch.

Mitigation Fact Sheet

https://acap.aq/resources/bycatch-mitigation/mitigation-fact-sheets/3517-pelagic-longline-hook-sheilding/file

5. Underwater Bait Setting devices

Scientific evidence for effectiveness in pelagic longline fisheries

Proven and recommended mitigation method. Underwater Bait Setting devices deploy baited hooks at a pre-determined depth immediately at the stern of the vessel. Underwater Bait Setting devices deploy baited hooks individually underwater down a track fitted to the fishing vessel's transom in a vertical manner enclosed in a capsule or similar device to eliminate any visual stimulus for seabirds following the vessel. The capsule is pulled quickly underwater to a predetermined target depth that can be adjusted in response to the dive capabilities of seabirds attending the vessel during line setting to prevent interactions. The following performance requirements are used by ACAP to assess the efficacy of underwater bait setting devices in reducing seabird bycatch:

(a) the device deploys encapsulated hooks in a vertical manner at the stern of the vessel until a minimum prescribed depth of 5 m is reached;

(b) branch lines meet current recommended minimum standards for branch line weighting described in Section 1; and

(c) experimental research has been undertaken to allow assessment of the effectiveness, efficiency and practicality of the technology against the ACAP best practice seabird bycatch mitigation criteria developed for assessing and recommending best practice advice on seabird bycatch mitigation measures.

At this time, the 'Underwater Bait Setter (Skadia Technologies)' (Robertson *et al.* 2015, Robertson *et al.* 2018, Barrington 2021) has been assessed as having met the performance requirements and are therefore considered to represent best practice.

Notes and Caveats

The assessment of this devices as best practice is conditional on continuing to meet the above performance requirements.

Minimum standards

'Underwater Bait Setter (Skadia Technologies)' – a computer operated and hydraulically powered machine that deploys baited hooks individually underwater in a capsule, and where recommended minimum standards for branch line weighting are met. The capsule is pulled down a removable track fitted to the vessel's transom and then catapulted to a target depth. The capsule descends along the track at 6 m.sec^{-1} and thereafter at ≥3 m.sec^{-1}.

Need for combination

The assessed underwater bait setting device has been assessed on the basis that branch lines meet current recommended minimum standards for branch line weighting. However, it is useful to note that the device integrates two performance components: i) protecting and ii) increasing the sink rate of the baited hooks to reduce the opportunities for seabirds to access them.

Implementation monitoring

A combination of port-based inspections and vessel-based autonomous data collection and surveillance (e.g. observer inspection of line setting operations; autonomous electronic surveillance and data collection; at-sea compliance checks) will be required to assess use and compliance.

Research needs

Conduct further field research to evaluate the effect of shallow set (e.g. 4-5 m depth) baits and deep-set baits (e.g. 6-10 m depth) on seabird ship-following behaviour and attacks on bait with an Underwater Bait Setter (Skadia Technologies) in *constant* use. This was not assessed by Robertson et al. (2018) who set alternate groups of hooks underwater and groups of hooks at the surface to compare relative effects). Conduct further field research to evaluate the performance of the Underwater Bait Setter (Skadia Technologies) with unweighted branch lines.

6. Time - Area closures

Scientific evidence for effectiveness in pelagic fisheries

Proven and recommended mitigation method. Avoiding fishing in peak areas and/or during periods of intense foraging activity, has been used effectively to reduce rapidly and substantially bycatch in longline fisheries.

Notes and Caveats

This is an important and effective management response, especially for high-risk areas, and when other measures prove ineffective**.** Although this can be highly effective in targeted locations and/or during a specific season, time-area closures may displace fishing effort into areas that are not as well regulated, leading to greater incidental mortality levels.

Minimum standards

None defined, but highly recommended.

Need for combination

Must be combined with other measures, both in the targeted areas when they are subsequently opened again for fishing, and also in adjacent areas to ensure displacement of fishing effort does not merely lead to a spatial shift in the incidental mortality.

Implementation monitoring

Vessels equipped with VMS combined with monitoring of activities by appropriate management authority is considered appropriate monitoring. Areas/seasons should be patrolled to ensure effectiveness if Illegal, Unreported and Unregulated (IUU) fishing activities are suspected.

Research needs

Further research is required on the seasonal variability in patterns of seabird distribution and behaviour in relation to fisheries, including whether closing areas to fishing causes a shift in the distribution of seabirds to adjacent areas.

OTHER CONSIDERATIONS

7. Side-setting with line weighting and bird curtain

Scientific evidence for effectiveness in pelagic fisheries

Shown to be more effective than other simultaneously tested mitigation measures, including setting chutes and blue dyed bait, on relatively small vessels in the Hawaiian pelagic longline tuna and swordfish fisheries (Gilman *et al*. 2003b). **Effectiveness in southern hemisphere**

fisheries has not been researched and consequently it is not recommended as a proven mitigation measures in these fisheries at this time (Brothers & Gilman 2006; Yokota & Kiyota 2006).

Notes and Caveats

Hooks must be sufficiently below the surface and protected by a bird curtain by the time they reach the stern of the vessel. In Hawaii, side-setting trials were conducted with a bird curtain and 45-60 g weighted swivels placed within 0.5 m of hooks. Japanese research concludes it must be used in combination with other measures (Yokota & Kiyota 2006). The Hawaiian trial was conducted in an area with an assemblage of largely surface-feeding seabirds, and this measure requires testing in other fisheries and areas where seabird abundance is higher and secondary ingestion (hooks retrieved by diving birds and secondarily – subsequently - attacked by surface foragers) is more important. Hence, it cannot be recommended for use in other fisheries at this time.

Minimum standards

Clear definition of side setting is required. Hawaiian definition is a minimum of only 1 m forward of the stern, which is likely to reduce effectiveness. The distance forward of the stern refers to the position from which baits are manually deployed. Baited hooks must be thrown by hand forward of the bait deployment location if they are to be afforded "protection" by being close to the side of the vessel.

Need for combination

Lines set from the side of vessels must be appropriately weighted in accordance with ACAP best practice advice and protected by an effective bird curtain.

Implementation monitoring

Requires fisheries observers or video surveillance.

Research needs

Currently untested in Southern Hemisphere fisheries against assemblages of diving seabirds (e.g. *Procellaria* sp. Petrels and *Puffinus* sp. Shearwaters) and albatrosses - urgent need for research.

Mitigation Fact Sheet

https://www.acap.aq/en/bycatch-mitigation/bycatch-mitigation-fact-sheets/769-fs-09-pelagic-longline-side-setting/file

8. Blue dyed bait

Scientific evidence for effectiveness in pelagic fisheries

Unproven and not recommended as a mitigation method (Boggs 2001; Gilman *et al*. 2003b; Minami & Kiyota 2001; Minami & Kiyota 2004; Lydon & Starr 2005, Cocking *et al*. 2008; Ochi *et al.* 2011).

Notes and Caveats

The available data suggest only effective with squid bait (Cocking *et al*. 2008). Onboard dyeing requires labour and is difficult under stormy conditions. Results are inconsistent across studies.

Minimum standards

Mix to standardised colour placard or specify (*e.g.* use 'Brilliant Blue' food dye [Colour Index 42090, also known as Food Additive number E133] mixed at 0.5% for minimum 20 minutes).

Need for combination

Must be combined with bird scaring lines or night setting.

Implementation monitoring

The current practice of dyeing bait on board vessels at sea requires observer presence or video surveillance to monitor implementation. Assessment of implementation in the absence of on-board observers or video surveillance requires baits be dyed on land and monitored through port inspection of all bait on vessels prior to departure on fishing trips.

Research needs

Further testing is needed in the Southern Ocean.

Mitigation Fact Sheet

https://www.acap.aq/en/bycatch-mitigation/bycatch-mitigation-fact-sheets/770-fs-10-pelagic-longline-blue-dyded-bait-squid/file

9. Line shooter

Scientific evidence for effectiveness in pelagic fisheries

Unproven and not recommended as a mitigation measure (Robertson *et al*. 2010b).

Notes and Caveats

Use of a line shooter to set gear deep cannot be considered a mitigation measure. Mainline set into propeller turbulence with a line shooter without tension astern (e.g. slack), as is the case in deep setting, significantly slows the sink rates of hooks (Robertson *et al*. 2010b).

Minimum standards

Not Applicable.

Need for combination

Not Applicable.

Implementation monitoring

Not Applicable.

Research needs

Not Applicable.

Mitigation Fact Sheet

https://www.acap.aq/en/bycatch-mitigation/bycatch-mitigation-fact-sheets/771-fs-11-pelagic-longline-bait-caster-and-line-shooter/file

10. Bait caster

Scientific evidence for effectiveness in pelagic fisheries

Unproven and not recommended as a mitigation measure (Duckworth 1995; Klaer & Polacheck 1998).

Notes and Caveats

Not a mitigation measure unless bait casting machines are available with the capability to control the distance at which baits are cast. This is necessary to allow accurate delivery of baits under a bird scaring line. Current machines (without variable power control) likely to deploy baited hooks well beyond the streaming position of bird scaring lines, increasing risks to seabirds. Few commercially available machines have variable power control. Needs more development.

Minimum standards

Not Applicable.

Need for combination

Not Applicable.

Implementation monitoring

Not Applicable

Research needs

Develop (and implement) casting machine with a variable power control.

Mitigation Fact Sheet

https://www.acap.aq/en/bycatch-mitigation/bycatch-mitigation-fact-sheets/771-fs-11-pelagic-longline-bait-caster-and-line-shooter/file

11. Underwater setting chute

Scientific evidence for effectiveness in pelagic fisheries

Unproven and not recommended as a mitigation measure (Brothers 1991; Boggs 2001; Gilman *et al*. 2003a; Gilman *et al*. 2003b; Sakai *et al*. 2004; Lawrence *et al*. 2006).

Notes and Caveats

In pelagic fisheries, existing equipment is not yet sturdy enough for large vessels in rough seas. Problems with malfunctions and performance inconsistencies have been reported (e.g. Gilman *et al*. 2003a, and Australian trials cited in Baker & Wise 2005).

Minimum standards

Not yet established

Need for combination

Not recommended for general application at this time.

Implementation monitoring

Not Applicable.

Research needs

Design problems to overcome.

12. Strategic offal discharge

Scientific evidence for effectiveness in pelagic fisheries

Unproven and not recommended as a primary mitigation measure in pelagic longline fisheries, but should be considered good practice (McNamara *et al*. 1999; Cherel *et al*. 1996).

Notes and Caveats

This should be considered a supplementary measure (i.e. used in addition to primary best practice mitigation measures). Offal attracts birds to vessels, and also conditions birds to attend vessels. Where practical, the discharge of offal should be eliminated or restricted to periods when not setting or hauling. Strategic discharge during line setting (dumping of homogenised offal to the side of the vessel during setting to attract birds to this area and away from the baited hooks, Cherel *et al.* 1996) can increase interactions and should be discouraged. Offal retention and/or incineration may be impractical on small vessels.

Minimum standards

Not yet established for pelagic fisheries. In the Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR), discharge of offal is prohibited during line setting for demersal longline fisheries. During line hauling, storage of waste is encouraged, and if discharged must be discharged on the opposite side of the vessel to the hauling bay.

Need for combination

Must be combined with other measures.

Implementation monitoring

Requires offal discharge practices and events to be monitored by fisheries observers or video surveillance.

Research needs

Further information needed on opportunities and constraints for the application of offal management in pelagic fisheries (short and long term).

13. Live bait

Scientific evidence for effectiveness in pelagic fisheries

Not recommended, as use of live bait may lead to increased rates of seabird bycatch (Robertson *et al*. 2010a; Trebilco *et al*. 2010).

Notes and Caveats

Live fish bait sinks significantly slower than dead bait (fish and squid), increasing the exposure of baits to seabirds. Use of live bait is associated with higher seabird bycatch rates.

Minimum standards

Not Applicable.

Need for combination

Not Applicable.

Implementation monitoring

Not Applicable.

Research needs

Not Applicable.

14. Bait thaw status – use of thawed baits rather than frozen baits

Scientific evidence for effectiveness in pelagic fisheries

Unproven and not recommended as a primary mitigation measure (Brothers 1991; Duckworth 1995; Klaer & Polacheck 1998; Brothers *et al*.1999; Robertson & van den Hoff 2010).

Notes and Caveats

Thawed baits are believed to sink faster than frozen baits. However, Robertson & van den Hoff (2010) concluded that the bait thaw status has no practical bearing on seabird mortality in pelagic fisheries. Baits cannot be separated from others in frozen blocks of bait, and hooks cannot be inserted into baits unless they are partially thawed (it is not practical for fishers to use fully frozen baits). Partially thawed baits sink at similar rates to fully thawed baits.

Minimum standards

Not Applicable.

Need for combination

Not Applicable.

Implementation monitoring

Not Applicable.

Research needs

Not Applicable.

15. Haul Mitigation

Scientific evidence for effectiveness in pelagic fisheries

Strategies to reduce seabird hooking during the haul have yet to be developed and properly tested for pelagic longline fisheries.

Notes and Caveats

The development and testing of seabird bycatch mitigation measures in pelagic longline fisheries has focussed almost exclusively on how to minimise or prevent bycatch during setting operations. Although some measures, such as Bird Curtains, have been designed and tested in demersal longline fisheries to reduce the incidence of haul captures, these methods are not directly transferable to pelagic longline fisheries.

Need for combination

No information

Research needs

Developing methods that minimize seabird hooking during line hauling in pelagic longline fisheries remains an urgent research priority.

Minimum standards

No information

Implementation monitoring

No information

Mitigation Fact Sheet

Note that this fact sheet is directed mostly at haul mitigation in demersal longline fisheries, and is not directly applicable to pelagic longline fisheries.

https://www.acap.aq/en/bycatch-mitigation/bycatch-mitigation-fact-sheets/1907-fs-12-demersal-pelagic-longline-haul-mitigation/file

16. Lasers

High Energy Lasers Strongly Discouraged

Scientific evidence for effectiveness in pelagic longline fisheries

Available evidence shows that high energy lasers (Class 4 lasers, the highest class in terms of laser hazards) are ineffective at deterring seabirds from danger areas around fishing vessels (Melvin *et al.* 2016) and likely damage seabird visual systems with negative effects on foraging behaviour of laser exposed seabirds (Fernandez-Juricic, 2023).

Notes and Caveats

Concerns are ongoing regarding the safety (to both humans and birds) and efficacy of laser technology of unknown energy levels as a seabird bycatch mitigation tool, as they continue to be used currently in various fisheries. Available evidence shows that high energy lasers are no longer marketed for fishery applications. Currently evidence is lacking on the possibility that lasers of lower energy levels delivered in different ways (scanning, blinking, wave-length, etc.) could be used safely and be effective in some applications.

Minimum standards

Not applicable as strongly discouraged.

Need for combination

Not applicable as strongly discouraged.

Implementation monitoring

Not applicable as strongly discouraged.

Research needs

As high energy lasers continue to be used in some fisheries, we encourage reporting of the extent and output power levels of laser use by ACAP Parties, including any information on effectiveness, as well as bird welfare effects.

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ANNEXE 8. LIGNES DIRECTRICES DE L'ACAP POUR LA MESURE DES TAUX D'IMMERSION DANS LES PALANGRES PÉLAGIQUES

Agreement on the Conservation of Albatrosses and Petrels

ACAP Guidelines to measure the sink rates of baited hooks in pelagic longline fisheries using Time-Depth Recorders

Reviewed at the Fifteenth Meeting of the Advisory Committee
Swakopmund, Namibia, 1 – 5 June 2026

INTRODUCTION

The incidental capture of seabirds in pelagic longline fisheries is a global concern, particularly for threatened albatrosses and petrels. Addressing this issue was a central motivation for establishing the Agreement on the Conservation of Albatrosses and Petrels (ACAP), which aims to secure a favourable conservation status for these species.

ACAP's Seabird Bycatch Working Group (SBWG) regularly reviews and updates ACAP's best practice mitigation advice for industrial fishing gear types, including pelagic and demersal longline and trawl gears. ACAP's review process considers safety, practicality, and fishery-specific characteristics when evaluating mitigation measures and developing best-practice guidance. For pelagic longline fisheries, ACAP recommends the simultaneous use of three best-practice measures—branch line weighting, night setting, and bird scaring lines—as the most effective approach to reduce seabird bycatch. Alternatively, an assessed hook-shielding device or an underwater bait-setting device can be used as a standalone mitigation option (ACAP 2024).

1.1. Branch line weighting

Branch lines should be weighted to sink the baited hooks rapidly out of the diving range of feeding seabirds. Studies show that placing more weight closer to the hooks makes them sink faster and consistently, and reduces seabird attacks on baits, as well as seabird mortalities (ACAP 2024).

SBWG12 reviewed the minimum standards for branch line weighting, defined a sink rate criterion for best practice branch line weighting, and provided further clarification on the use of weight attached to or integrated into the hook, as well as on weighting materials.

Best practice branch line weighting should achieve an average sink rate of 0.5 m/s to 5 m depth. The following configurations have been demonstrated, under controlled conditions and with metal materials, to meet this standard:

a) 40 g or greater attached within 0.5 m of the hook; or

b) 60 g or greater attached within 1 m of the hook; or

c) 80 g or greater attached within 2 m of the hook.

When weight is attached to the branch line, or integrated into the hook, a minimum added weight of 50 g is sufficient to achieve a sink rate of 0.5 m/s to 5 m depth. Branch line weighting is integral to the fishing gear and, compared to bird-scaring lines and night setting, has the advantage of being more consistently implemented, thereby facilitating compliance and port monitoring. It is recommended to avoid using lead when it may be ingested (e.g. attached to or integrated into the hook). Using lighting devices or other fishing accessories as weights is not recommended unless they meet the sink rate criterion.

With the inclusion of a defined sink-rate criterion for best-practice branch line weighting, it became necessary to establish guidelines on how to measure the sink rates of baited hooks. This document provides a step-by-step protocol for conducting these measurements using time-depth recorders (TDRs), ensuring that data collected are accurate and comparable.

1.2. Scope and intended users

The protocol is intended for use by scientific observers and researchers in a variety of contexts, including on research vessels or commercial fishing vessels operating under normal fishing conditions or under charter for research purposes.

1.3. Time-depth recorders

The TDRs must be small, lightweight (ideally less than 3 grams in seawater), robust, easy to set up and download at sea and not appreciably affect sink rates. Various manufacturers produce TDRs that meet these criteria, including, but not limited to the following manufacturers:

- Cefas Technology (https://cefastechnology.co.uk/products/data-storage-tags/g5)
- Star-Oddi (https://www.star-oddi.com/products/archival-tags)
- Lotek https://www.lotek.com/products/lat1000-series/

Due to a range of factors, the sink rates of pelagic longlines can vary significantly. Studies should aim to complete at least 10 replicates of *each weighting regime* in a sampling session. This can be achieved by deploying 10 TDR branch lines in *a single set* of the longline. The exercise can be repeated over multiple sets (days) if larger sample sizes are required or if between-set variation – due to changing sea states or other factors – is an important part of the research plan.

The precise estimation of baited hook sink rates relies on strict adherence to the following procedures and practices.

1.4. Determining depth offsets at the sea surface

All TDRs exhibit errors in depth readings at the sea surface, known as 'zero offsets' by TDR manufacturers. These offsets usually fall within the range +0.5 m to -0.5 m. Clearly, zero must be zero, meaning that the depth at the sea surface must always read 0 m.

To measure sink rates accurately, particularly at the surface (e.g. 0-2 metres) where baits are most visible and where small errors can lead to erroneous interpretations, the zero offsets need to be determined for each TDR, and the TDR data corrected during the data analysis to account for the offset. To determine the offsets, simply turn the TDRs on (as described below) and maintain them at the sea surface for about 20 seconds, which equates to 20 records at a one-second sampling rate. This procedure should be performed in calm seawater before leaving port, ensuring that the water temperature is stable. As zero offset refers to a depth of 0 m, the TDRs must be held at the sea surface during this procedure. Document the calculated zero offsets for each TDR for later reference.

1.5. Setting up procedure (at sea)

Equip yourself with a digital wristwatch that displays the time at one-second intervals. Synchronise the time on your wristwatch with the time on your computer. This synchronised time will be programmed into the TDRs when they are connected to the computer, ensuring that your watch, computer, and TDRs all operate on the exact same time. This synchronisation allows water entry times to be accurately recorded.

Program the devices to record depth at 0.5 m increments and time at one-second intervals. Program them to turn on at a convenient time *before* the scheduled deployment time. You can choose to have them switch off *after* reaching estimated fishing depth, or let them run for all, or part of, the soak period. The latter option, however, comes at the expense of lifetime battery longevity.

1.6. Attaching the TDRs

The TDRs can be attached to the branch lines using multiple cable ties or an equivalent method. If cable ties are used, tighten them with a tensioning device like that shown in **ANNEX 1**. To ensure that the TDRs sink at the same rate as the baited hooks, and to reduce the likelihood of shark bite-offs, TDRs should be attached within 30 cm from the hooks. Finally, wrap the TDRs in waterproof tape (such as electrical tape) and label each one (using a waterproof felt-tipped pen) with a unique number that corresponds to your deployment schedule.

As a practical aid during hauling, consider marking the snap of each TDR branch line with coloured tape and the corresponding TDR number, to help the crew identify and separate these lines promptly and avoid accidental impacts that may damage the device.

1.7. Deploying the TDR branch lines

Instruct the crew to deploy the TDR branch lines in accordance with their normal practice concerning the bait landing distance behind the vessel and its position relative to the vessel's wake. This means either over the centre line of the propeller, in the vessel's wake on either side, or outboard of the wake zone on either side. *Consistency in the branch line deployment method is essential.*

Use your digital wristwatch to record the exact time to the nearest second *when baited hooks land in the water.* This record is crucial, as it serves as the starting point for calculating sink times and rates to target depths. Inferring water entry times from the time-depth files when downloaded is not as precise as time-synchronised visual observations made during the set.

1.8. Downloading the files

When the longline is hauled, retrieve the TDRs, rinse them in fresh water, and download the CSV files from each TDR into separate spreadsheets. The downloaded data will be presented in columns for date, sampling time and depth in the water column, as shown in **Table 1** below. Locate the water entry time and highlight it in the data. Retain about 15 rows of TDR records before the water entry time so others can assess the extent of the TDR offsets *prior* to the time of water entry. Delete all data rows before these 15 rows. Add a new column ("number of seconds" or simply "seconds") beside the depth column, with the first entry (0 sec) corresponding to the time of water entry and fill down as shown in the table.

Copy the raw values collected by the TDRs, which are listed in the "Depth" column of **Table 1**. Paste them into a separate column titled "Corrected depth". Using the scores in the "Corrected depth" column, write a formula in Excel to adjust the raw scores based on the offset from your still water determinations for each TDR mentioned above.

Importantly, the depth offsets derived in still water should be the same or very close to the offsets shown in the downloaded data before water entry (0.5 m, as shown in **Table 1**). *If discrepancies occur, prioritise the offsets obtained from your still water tests. Apply the formula to correct the raw depth scores collected by the TDRs.*

Add your name, the date, the vessel name, the TDR number and any other relevant information to the rows of the spreadsheet immediately above the data rows.

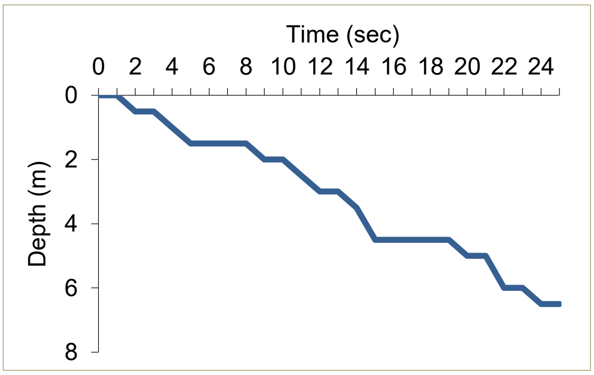
1.9. Data presentation

Present the data in **Table 1** below for each individual TDR in your report. Include the time taken to reach both 2 m and 5 m depths, along with the associated sink rates. Also include a graph of the sink profile to a depth of 5 m, as illustrated. Finally, along with the individual records, your report should present the average values (with 95% confidence limits) for the results shown in the table for all TDRs deployed in a sampling session. The report should also include a description of how the zero offset was calculated.

Table 1. Example of how the data and results are to be presented for each TDR, showing the observed water entry time, a column (third from the left) of the elapsed time since water entry, the depth data from the TDR and the corrected depths based on individual TDR zero offsets.

Date	Time (sec)	Number of seconds	Depth (m)	Corrected depth (m)	
19/03/2015	10:37:36		0.5		
19/03/2015	10:37:37		0.5		
19/03/2015	10:37:38		0.5		
19/03/2015	10:37:39		0.5		
19/03/2015	10:37:40		0.5		
19/03/2015	10:37:41		1		
19/03/2015	10:37:42		0.5		
19/03/2015	10:37:43	**0**	0.5	**0**	**Water entry time here**
19/03/2015	10:37:44	**1**	0	0	
19/03/2015	10:37:45	**2**	1	0.5	
19/03/2015	10:37:46	**3**	1	1	
19/03/2015	10:37:47	**4**	1.5	1	
19/03/2015	10:37:48	**5**	2	1.5	
19/03/2015	10:37:49	**6**	2	1.5	
19/03/2015	10:37:50	**7**	2	1.5	
19/03/2015	10:37:51	**8**	2	1.5	
19/03/2015	10:37:52	**9**	2.5	2	
19/03/2015	10:37:53	**10**	2.5	2	
19/03/2015	10:37:54	**11**	3	2.5	
19/03/2015	10:37:55	**12**	3.5	3	
19/03/2015	10:37:56	**13**	3.5	3	
19/03/2015	10:37:57	**14**	4	3.5	
19/03/2015	10:37:58	**15**	5	4.5	
19/03/2015	10:37:59	**16**	5	4.5	
19/03/2015	10:38:00	**17**	5	4.5	
19/03/2015	10:38:01	**18**	5	4.5	
19/03/2015	10:38:02	**19**	5	4.5	
19/03/2015	10:38:03	**20**	5.5	5	
19/03/2015	10:38:04	**21**	5.5	5	
19/03/2015	10:38:05	**22**	6.5	6	
19/03/2015	10:38:06	**23**	6.5	6	
19/03/2015	10:38:07	**24**	7	6.5	

	RESULTS
Depth range (m)	**0-2**
Time (sec)	8
Rate (m/sec)	0.25



1.10. Supporting information

To ensure your recordings are interpreted correctly, include the following details for each completed round of TDR deployments.

1. Name and location of fishery.
2. Vessel name and length.
3. Vessel setting speed.
4. Vessel setting direction in relation to the direction of the current.
5. Sea state.
6. Branch line length, construction material (e.g. 1.8 mm monofilament) and length.
7. Hook type, size (e.g. 15/0 circle hook) and weight.
8. Bait (species, size / weight, frozen / defrosted).
9. Use of lightsticks / electric lights / hook-shielding devices, and location in the branch line.
10. Mainline configuration – surface set tight configuration or with slack astern to create a catena between the floats (e.g., with the use of a line shooter).
11. Line weighting regime – weight type (leaded swivel, sliding lead, leaded hook), amount of added weight additional to the mass of the hook, and distance from the hook.
12. Bait landing position astern – over the centre line of the propeller, edge of the wake on either side of the vessel or outboard of the wake zone on either side.

The cable tie gun provided via the link below is shown for illustrative purposes only. Any comparable brand can be used.

Professional cable tie gun

ANNEXE 9. BOÎTE À OUTILS POUR LES CONSEILS DE RÉDUCTION DES CAPTURES ACCESSOIRES D'OISEAUX MARINS DANS LES PÊCHES ARTISANALES ET À PETITE ÉCHELLE

Agreement on the Conservation of Albatrosses and Petrels

Toolbox for Seabird Bycatch Mitigation Advice in Artisanal and Small-Scale Fisheries

Reviewed at the Fifteenth Meeting of the Advisory Committee
Swakopmund, Namibia, 1 – 5 June 2026

ARTISANAL & SMALL-SCALE FISHERIES

While there is no universally agreed upon definition of artisanal and small-scale fisheries (SSF), previous work presented to ACAP have provided some clarity and definition (e.g. Debski et al. 2014, Favero et al. 2014, Goya et al. 2011). Along with a clearer understanding of the characteristic of these fisheries, it has also become evident that seabird bycatch does occur in some SSFs, including the bycatch of ACAP listed species (e.g. Mangel et al. 2012). Some commonly recognized characteristics of SSFs include their:

- Lack of mechanization
- Small vessel and crew size
- Highly geographically dispersed fleets
- Vessels change and adapt gear frequently
- Limited enforcement of existing regulations
- Common in impoverished communities, i.e. few resources for monitoring, mitigation

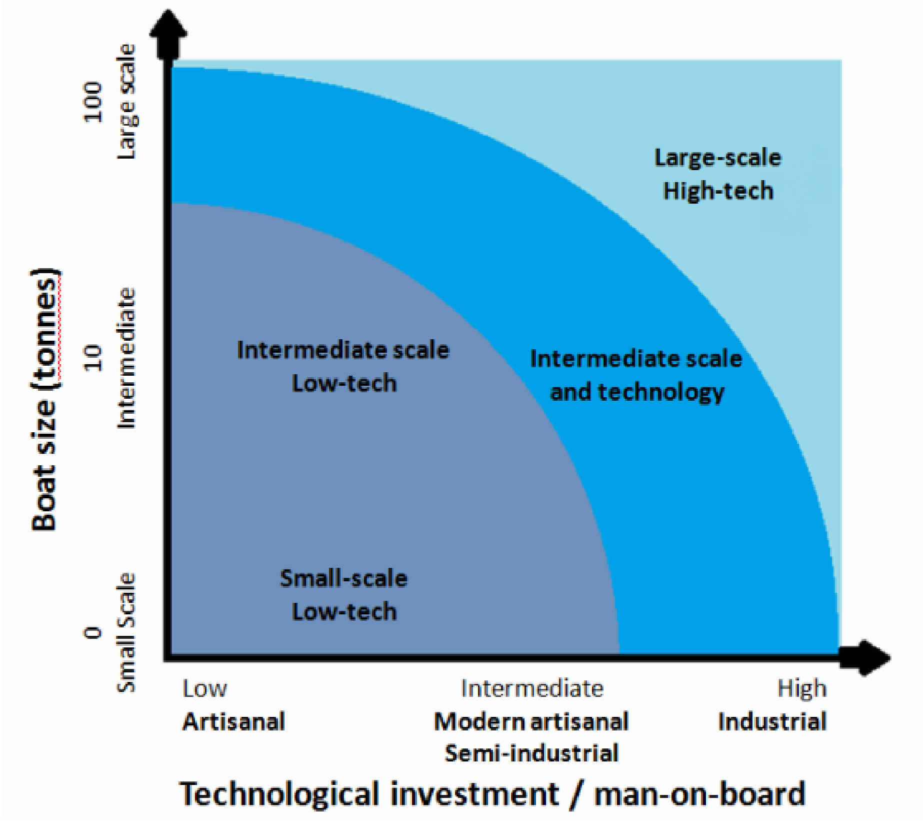


Figure 1. Graphic definition of small-scale, artisanal and industrial fisheries as a function of vessel size and relative technological investment. Adapted from FAO Small-scale and artisanal fisheries at http://www.fao.org/fishery/topic/14753/en

TOOLBOX CONSIDERATIONS

Given these SSF characteristics, opportunities for bycatch mitigation are, in many cases, challenging to identify or implement. Early efforts to test or implement bycatch mitigation mostly focussed on sea turtles and small cetacean bycatch (e.g. Gilman et al. 2010, Mangel et al. 2013, Peckham et al. 2015, Ortiz et al 2016). More recent mitigation developments relevant to seabird bycatch are summarised in the toolbox table.

Apart from known technical solutions to bycatch, when working with SSF we believe that it is imperative that alternative methods to reduce bycatch be considered. This need for alternative methods takes into account the challenges in testing and implementing mitigation measures in these fisheries, including the fishery characteristics detailed above. This toolbox approach of mitigation solutions in SSF therefore includes the implementation of educational/outreach campaigns, the development of human resources (capacity building), long-term working plans in SSF communities, training in safe handling and release, and co-management of resources or fishing grounds, among others. Tools like these can be considered to be potentially applicable across fishery types. These non-technological solutions may often be the first or perhaps most effective options available in these fisheries. The dynamic nature of SSF also reinforces the need for fishery monitoring, as this can help identify emergent bycatch issues or potential opportunities to guide fishery development to reduce negative impacts before practices become entrenched.

In choosing a mitigation solution, apart from the summary information contained in the toolbox table, we have developed a series of guidance questions that can help researchers and managers determine if a particular mitigation technology is feasible for their SSF:

- What oversight or enforcement is required to demonstrate implementation?
    - Mitigation fixed into fishing gear can more easily be monitored (e.g. port inspection).
- The estimated financial cost of the mitigation solution and how that compares to the operating costs in the fishery.
- Whether the equipment require maintenance or replacement parts.
    - Who would provide maintenance and replacements?
    - Are components available in local markets or do they need to be imported?
    - What are the ongoing costs?
- Whether training in the mitigation technique is required.
    - Who would provide the training?
    - Is there sufficient training capacity?
- Whether the mitigation technique is appropriated for a small vessel.
    - Consider storage space, effective deployment, etc.
- Whether the mitigation technique impacts the target catch or leads to changes in bycatch (including other bycatch species).

Table 1. Mitigation methods that **reduced the bycatch of albatrosses and/or petrels** in small-scale fisheries.

Fishing gear	Mitigation	Function	Testing	Findings	Effect on target catch	Human safety considerations	Additional benefits	Limitations/ considerations	Source
Driftnet	Net illumination	Increase net visibility	Small-scale surface drift net. Sharks, tunas, dolphinfish. Off shore Peruvian coast	Addition of LEDs reduced White-chinned petrel bycatch.	Illuminated nets did not reduce target catch.	No human safety aspects to be considered.	Reduced sea turtle and small cetaceans bycatch by 74% and 71% respectively.	Cost of LEDs. Management of spent batteries.	Bielli et al. 2020
Demersal longline	NISURI fastset	Reduces availability of baited hooks for birds during casting.	Small-scale demersal longline. Hake. Ecuador.	Increased set speed ~10x	No reduction in target catch.	No human safety aspects to be considered.	N/A	Requires the production and installation of the NIZURI system.	Brothers et al. 2014 Suaréz & Wallace 2023 Cruz et al. 2026
	Night setting	Less bird activity and reduce visual detection of baits by birds	Small-scale demersal longline. Tilefish and various species of snapper and grouper. Southeast Brazil.	Reduced albatrosses and petrels bycatch.	Not evaluated. The fleet mostly sets during the day aiming maximum catch.	No human safety aspects to be considered.	N/A	Potential reduction in target species catch.	Canani et al. 2023
			Small-scale demersal longline. European hake. Western Mediterranean.	Reduced bait attacks by shearwaters and gulls.	No reduction in target catch.	No human safety aspects to be considered.	N/A	N/A	Cortês and Gonzáles-Solis 2018

Fishing gear	Mitigation	Function	Testing	Findings	Effect on target catch	Human safety considerations	Additional benefits	Limitations/ considerations	Source
Demersal set net	Metal oxide / barium sulfate nets	Possibly increases net stiffness (and increased acoustic reflectivity).	Demersal gillnet fishery. Haddock, cod, pollock, spiny dogfish. Lower Bay of Fundy, New Brunswick, Canada.	Reduced bycatch of great shearwaters.	No reduction in target catch.	No human safety aspects to be considered.	Reduced harbor porpoise bycatch.	N/A	Trippel et al. 2003
Pelagic longline	Bird scaring line	Scare birds away from the hooks setting area.	Small-scale pelagic longline. Sharks. Peru.	Reduced interactions of albatrosses and petrels.	No reduction in target catch.	No human safety aspects to be considered.	Reduces baits stealing by birds.	Suitable only for pelagic longline vessels that operates similarly to industrial vessels.	Quiñones et al. 2024 Quiñones et al. 2026
Hand-operated dropline	Camouflage tube (Suarez system)	Reduces availability of baited hooks for birds during setting and hauling.	Small-scale hand-operated drop line. Hake. Ecuador.	The camouflage tube prevents birds from visualizing and assessing baited hooks during casting and hauling.	No reduction in target catch.	No human safety aspects to be considered.	The camouflage tube prevents birds from bitting and damaging the fish catch during hauling.	Requires the production and installation of the camouflage tube on the vessel.	Suárez et al. 2023

Table 2. Mitigation methods **not demonstrated to reduce albatrosses and/or petrels bycatch**.

Fishing gear	Mitigation	Function	Testing	Findings	Effect on target catch	Human safety considerations	Additional benefits	Limitations/ considerations	Source
Demersal longline	Bird scaring line.	Scare birds away from the hooks setting area.	Small-scale demersal longline. European hake. Western Mediterranean.	Bird scaring line (30-45 aerial coverage) did not reduce the interaction with shearwaters.	No reduction in target catch.	No human safety aspects to be considered.	N/A	Suitable only for demersal longline vessels that operates similarly to industrial vessels.	Cortês and Gonzáles-Solis 2018
Demersal setnet	Net illumination	Increases net visibility	Small-scale demersal gillnet fishery. Guitarfish and flounder. Sechura Bay, Peru.	Addition of green LEDs reduced guanay cormorant bycatch.	No reduction in target catch.	No human safety aspects to be considered.	Reduced sea turtle bycatch by 64%.	LED spacing at 10 m. Management of spent batteries.	Ortiz et al. 2016 Mangel et al. 2018
	Orange net colour	Increase net visibility	On little penguins in captivity	Orange color monofilament lines resulted in lower collision rates.	No reduction in target catch.	No human safety aspects to be considered.	N/A	N/A	Hanamseth et al. 2017
	Discard management	Reduce seabird abundance around the vessel.	Small-scale demersal setnet. Demersal fish species. Southern coast of Portugal.	Discard management reduced the abundance of gulls and gannets around the vessel.	No reduction in target catch.	No human safety aspects to be considered.	N/A	N/A	Frade et al. 2025
	Bird scarer (visual deterrent)	Falcon-shaped kite bird visual deterrent (from *Scarybird*) could reduce seabird abundance around the vessel.	Small-scale demersal setnet. Demersal fish species. Southern coast of Portugal.	Reduced gulls and gannets abundance around the vessel and bycatch.	No reduction in target catch.	No human safety aspects to be considered.	N/A	N/A	Frade et al. 2025

Fishing gear	Mitigation	Function	Testing	Findings	Effect on target catch	Human safety considerations	Additional benefits	Limitations/ considerations	Source
	Bird scarer (visual deterrent)	Falcon-shaped kite bird visual deterrent (from *Scarybird*) could reduce seabird abundance around the vessel.	Small-scale demersal setnet. Demersal fish species. Berlengas Islands Special Protected Area, Portugal.	Reduced gulls and gannets abundance around the vessel and bycatch.	No reduction in target catch.	No human safety aspects to be considered.	N/A	N/A	Almeida et al. 2023
	Net illumination	Increases net visibility	Small-scale demersal gillnet fishery. Cod, whitefish, pikeperch, and flounder. Baltic Sea.	Constant green or flashing withe LEDs did not reduce the bycatch ducks and scoters.	No reduction in target catch.	No human safety aspects to be considered.	N/A	Cost of LEDs Management of spent batteries.	Field et al. 2019
	High contrast panels	Increase net visibility	Small-scale demersal gillnet fishery. Cod, whitefish, pikeperch, and flounder. Baltic Sea.	Did not reduce the bycatch of ducks and scoters.	No reduction in target catch.	No human safety aspects to be considered.	N/A	It is necessary to make and install the panels to the net.	Field et al. 2019
	Acoustic deterrent (megaphone)	Megaphone emitting calls of the European Herring Gull, intended to deter birds by simulating natural distress levels.	Small-scale demersal setnet. Demersal fish species. Southern coast of Portugal.	Increased the abundance of gulls and gannets around the vessel.	No reduction in target catch.	No human safety aspects to be considered.	N/A	It is necessary to make and install the system, including power source, wiring and megaphone.	Frade et al. 2025
Driftnet	Highly visible netting in upper net.	Increase net visibility, acoustic reflectivity	Coastal drift gillnet. Salmon. Puget Sound, Washington, USA	Reduced bycatch of murres and auklets.	No reduction in target catch.	No human safety aspects to be considered.	N/A	N/A	Melvin et al. 1999

Fishing gear	Mitigation	Function	Testing	Findings	Effect on target catch	Human safety considerations	Additional benefits	Limitations/ considerations	Source
	Acoustic alarms	Acoustic reflectivity	Coastal drift gillnet. Salmon. Puget Sound, Washington, USA	Reduced murre bycatch.	No reduction in target catch.	No human safety aspects to be considered.	N/A	N/A	Melvin et al. 1999

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ANNEXE 10. BOÎTE À OUTILS POUR LES CONSEILS DE RÉDUCTION DES CAPTURES ACCESSOIRES D'OISEAUX MARINS DANS LES PÊCHES À LA SENNE COULISSANTE

Agreement on the Conservation of Albatrosses and Petrels

Toolbox for seabird bycatch mitigation advice in purse seine fisheries

Reviewed at the Fifteenth Meeting of the Advisory Committee
Swakopmund, Namibia, 1 – 5 June 2026

BACKGROUND

Since 2016, purse seine fisheries have become a part of the ACAP agenda (Baker & Hamilton 2016; Debski *et al.*, 2016). These discussions have focused on understanding the fishing gear configuration and its operation, as well as identifying seabird species involved in bycatch incidents in both industrial and small-scale vessels.

As early as described in Suazo *et al.* (2017a), the list of purse seine fisheries showing signs of seabird bycatch included at least eight countries, spanning seven FAO marine areas, impacting 33 seabird and 2 waterbird species, primarily concentrated in coastal fishing grounds.

As showed in Melvin *et al.* (2023), purse seine fisheries involve a surrounding net used to encircle shoals of pelagic target species like tuna, sardines, and squids. The fishing gear consists of a wall of netting fitted with an upper line of buoys or floats and a lower line of weights (Fig. 1).

In the lower part of the net, a system of steel rings connected by cables allows for the net to be closed, preventing fish/squid from escaping through the lower part of the net. The dimensions of the net, as well as the mesh size, vary depending on whether the net is for small-scale or industrial vessels and the target species, respectively.

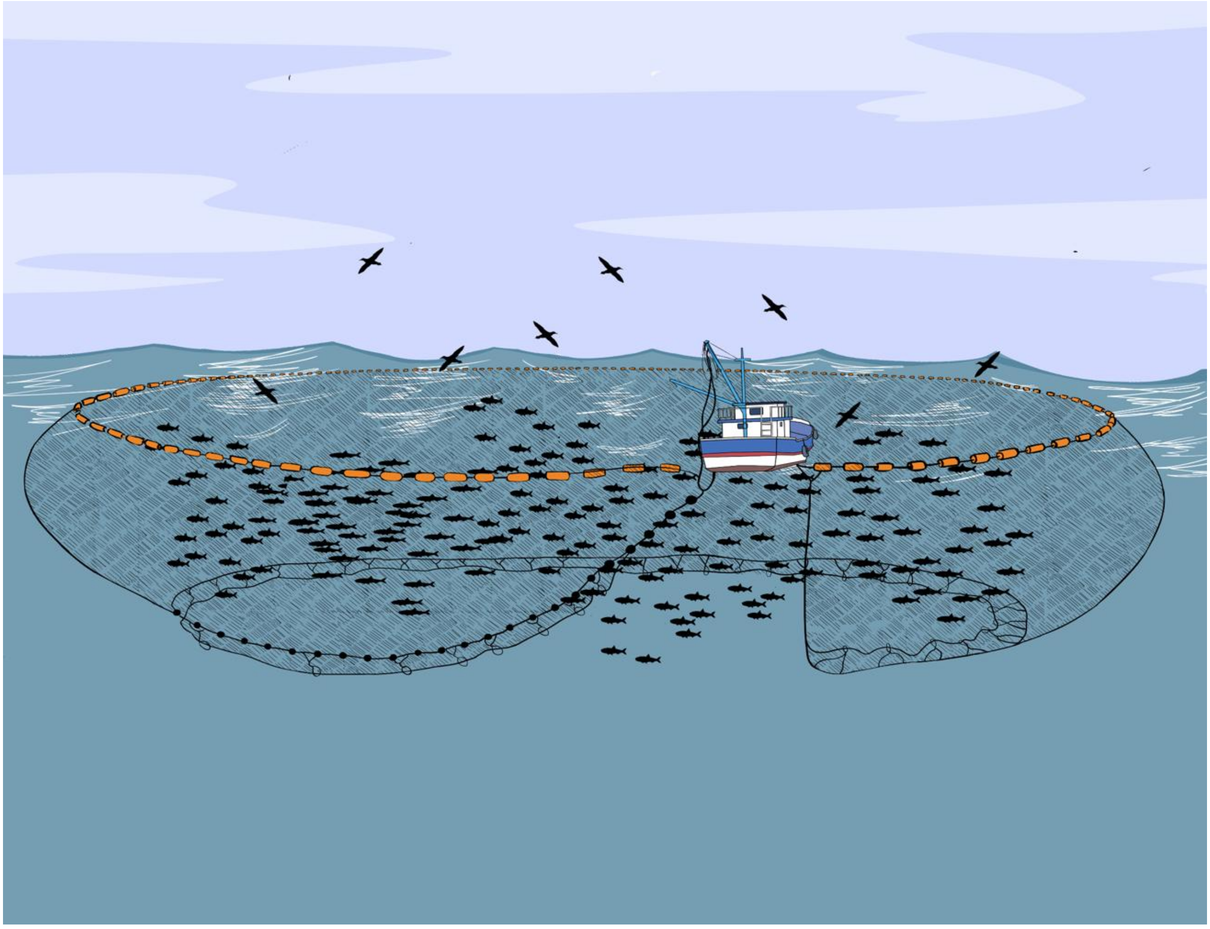

Figure 1. Example of a small-scale purse seine fishing operation. The net encircles the fish shoal, with its upper part buoyed and the lower part weighted. Steel wires are then winched together to close the net, forming a bowl shape (© C.G. Suazo).

IDENTIFYING SEABIRD BYCATCH FOR EFFECTIVE MITIGATION MEASURES IN PURSE SEINE FISHERIES

Purse seine fisheries are among the least studied in terms of their impact on non-target species, with more frequent records involving marine mammals, marine reptiles, seabirds, and other taxa with an emphasis in industrial scale operations (Soykan *et al.*, 2008). Thus, in the case of industrial purse seine operations for tuna, these fisheries have been recognized as non-problematic for seabirds (Gilman & Lundin, 2010). There is a set of voluntary best practices aimed at reducing the chances of bycatch, such as avoiding sets in areas with a presence of non-target species and implementing fishing gear entanglement prevention measures for cetaceans, sharks, and sea turtles (Swimmer *et al.*, 2020).

However, seabird bycatch has also been documented in other industrial and small-scale vessels targeting small pelagic fish, with entanglements occurring at different stages of the fishing operation (i.e., setting or hauling) and across various components of purse seine gear and onboard facilities. It is strongly recommended that these features be systematically identified through monitoring systems or observer programmes to detect bycatch hotspots across fleets (e.g., Suazo *et al.*, 2016) and to incorporate this information into data collection protocols.

Among mitigation measures, some studies have suggested the use of sound and lasers as deterrents. Coastal seabird species, such as gulls, have shown reduced abundance in response to noise in northern Chile, whereas Procellariiform species, such as shearwaters and petrels, have shown limited response (Diez, 2017). The use of lasers in purse seine fisheries in the same region has not proven effective, as most sets are conducted during daylight hours. Indeed, controlled trials in trawl fisheries have demonstrated that laser effectiveness depends on specific operating conditions, including light levels and vessel speed (Melvin *et al.*, 2016).

Other mitigation measures for purse seine fisheries involve structural modifications of the gear, such as the Modified Purse Seine (MPS). This entails a series of adjustments including buoy mounting and mesh size, among others. These adjustments have demonstrated a reduction in entanglement and capture of birds belonging to ACAP-listed species, such as the pink-footed shearwater *Ardenna creatopus* and the black-browed albatross *Thalassarche melanophris*, in Chile (Suazo *et al.*, 2017b, 2019). The effectiveness of these structural modification measures has been evaluated against the best practice criteria adopted by ACAP to inform decision-makers (Melvin *et al.*, 2023).

Another modification to the typical structure of purse seine gear involves the use of "escape windows," based on opportunistic observations of diving seabirds such as shearwaters and penguins. These windows consist of sections of the buoyline without floats, allowing some seabird species to escape from the encircled net. This approach has been documented in northern Chile in industrial vessels targeting anchovy, where it has been observed for the pink-footed shearwater, the sooty shearwater *Ardenna grisea*, and potentially for the Humboldt penguin *Spheniscus humboldti* (Auger Lancellotti, 2019).

Recent sensory mitigation measures include the use of a bird-scaring device (scaring kite) in purse seine fisheries in Portugal (Oliveira *et al.*, 2021). This device has proven effective in reducing the number and activity of some seabird species like gulls, but its effect on other seabird species such as shearwaters requires further research. If these measures prove effective, they may contribute to the reduction of bycatch in ACAP-listed species (e.g., Balearic shearwater *Puffinus mauretanicus*) previously reported for purse seine vessels in these waters (Oliveira *et al.*, 2015).

THE COMMUNICATION OF MITIGATION EFFECTIVENESS BASED ON EVIDENCE THROUGH THE TOOLBOX APPROACH

The diversity of mitigation measures and the need to communicate these options on their evidence and effectiveness have led to the development of the "toolbox" approach, which serves as an informative instrument to support mitigation decisions (Mangel *et al.*, 2016, 2017). This approach, initially proposed for artisanal and small-scale fisheries, is also applicable to different scales and fishing gears like purse seine fisheries.

Moreover, the information summarized in tables reporting the features of each potential measure can be supplemented by guided questions on the feasibility of the measure, which are largely covered in the assessment under the ACAP best practice criteria (Suazo *et al.*, 2017). In addition, conservative approaches should be adopted, or at minimum, notes of concern should be included regarding implementation standards and expected performance when proposed mitigation measures are based more on anecdotal evidence than on experimental support. This is particularly relevant when measures are perceived by fleets as very low-cost and easy to implement using *in situ* resources, such as water spraying recommended to prevent seabirds from entering the encircled net.

The use of water spraying or water curtains as deterrents should only be considered when the pumped water does not contain traces of edible oil originating from wastewater generated during fishing operations. For example, we conducted experiments to evaluate the effects of different concentrations of edible oil derived from target fish species in purse seine fisheries in south-central Chile.

Soaked seabirds and associated mortality are frequently linked to the critical stage when the net is lifted from the water surface at the end of the haul (i.e., net retrieval), which is a key moment for seabird bycatch in fishing operations. This has been documented for species such as the common gull (*Larus canus*), herring gull (*Larus argentatus*), great black-backed gull (*Larus marinus*), and several unidentified gull species in purse seine fisheries targeting herring (*Clupea harengus*) in Norway (Christensen-Dalsgaard *et al.*, 2022).

To address the impact of fish oil on feathers, we conducted experiments evaluating feather agglutination and weight gain following exposure to different concentrations of sardine-derived edible oil. Increasing oil concentrations led to greater agglutination and disruption of barb structure in both back and pectoral feathers of the pink-footed shearwater. Notably, exposure to a 50% oil–seawater mixture resulted in an 18-fold and 29-fold increase in the weight of pectoral and back feathers, respectively (Fig. 2).

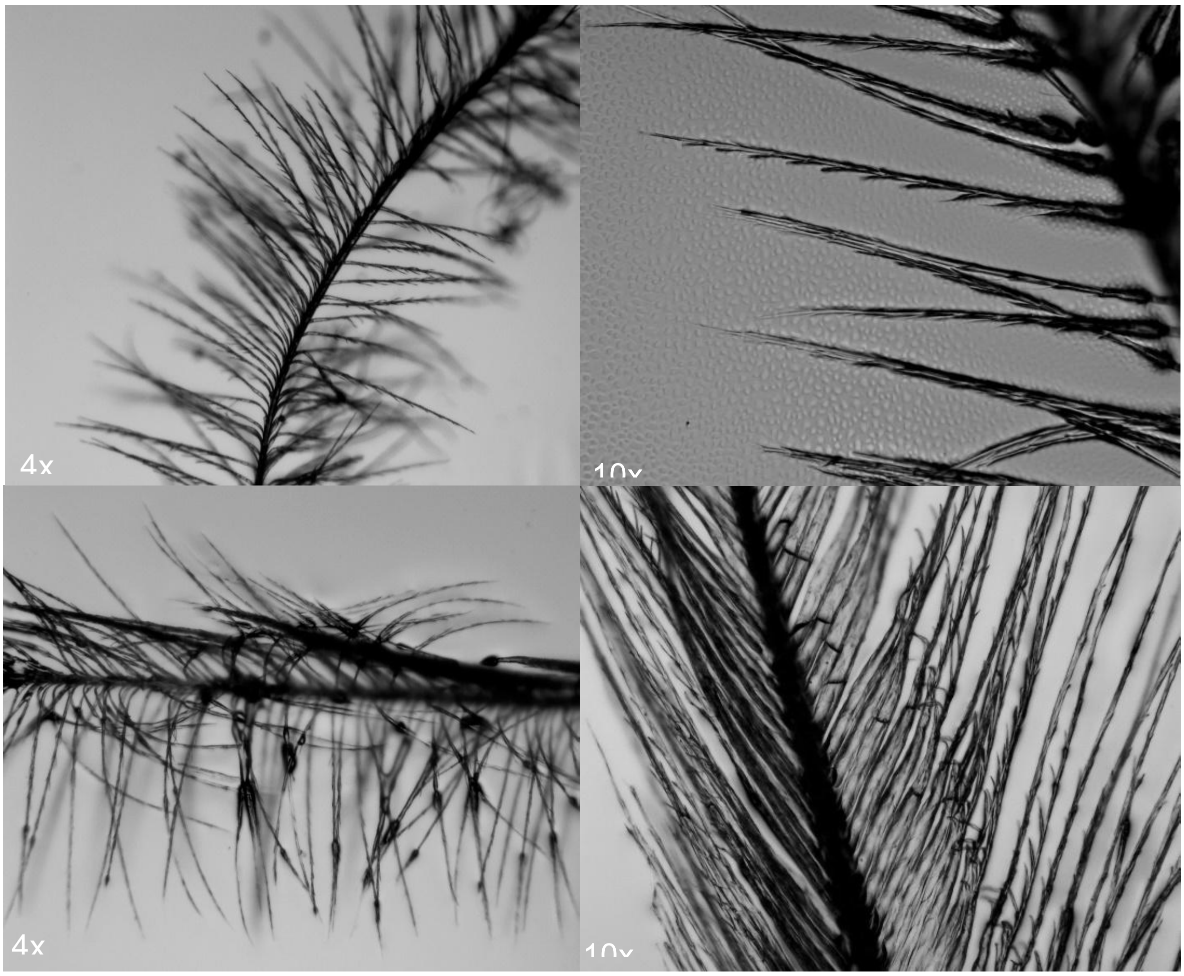

Figure 2. Example of agglutination due to edible oil exposure in the feather of the pink-footed shearwater. The disruption of the connection between barbs of feathers (both in bottom) is noted when compared to control feathers in the two upper photographs (© ATF-Chile).

This example encourages the incorporation of evidence-based minimum standards for the effective performance of mitigation measures, preventing inappropriate application and identifying key features (e.g., materials, dimensions, and supplies) that minimize unintended effects. This is particularly relevant when water curtains are proposed as mitigation solutions in major purse seine fleets, such as those operating in the Humboldt Current System (López & Vega, 2023).

We present a bycatch mitigation toolbox for purse seine fisheries, incorporating different levels of evaluation of mitigation function, empirical findings, limitations, and effectiveness in reducing seabird bycatch overall, including for species listed as priorities by the Agreement on the Conservation of Albatrosses and Petrels (ACAP). These latter are identified as mitigation methods that reduce (Table 1), and not reduce (Table 2) bycatch of albatrosses and petrels.

A practical compilation on the status of different levels of our knowledge on emergent and established measures for Best Practices Advice in priority fisheries like purse seine is provided (Baker *et al.*, 2024). It addresses important dimensions to consider as our understanding of the interaction between seabirds and purse seine fishing continues to increase in significant fleets globally (e.g., Rivadeneyra-Villafuerte *et al.*, 2021), as well as the increase in emergent ideas for mitigation that must be evaluated for tailored conservation actions in these widely distributed fisheries.

Table 1. Mitigation methods that reduce albatross and/or petrel bycatch in purse seine fisheries. N/A: Not available.

Mitigation	Function	Testing	Findings	Effect on target catch	Human safety considerations	Additional benefits	Limitations / considerations	Source
Modified purse seine (MPS)	Structural package of on fishing gear for the reduction of entanglement of seabirds with the purse seine gear. (For set and haul).	Small-scale purse seine in the Humboldt Current, Chile. Sardine and Anchovy.	Trials showed the reduction in seabird bycatch for diving seabird species by 98% related to the reduction of entanglement in fishing gear.	Increases the catch of target species.	Handling times and effort with fishing gear reduced.	1. Modified purse seine showed improvement in catch success of the target fish species. 2. Reduction in netting material with savings in future maintenance or new fishing gear.	Mesh size has been proved to use a minimum size of 3 ½ inches to avoid the entanglement of small seabird species like shearwaters.	Suazo *et al.* 2016; 2017a,b; 2019
Bird scaring device **(Scaring kite)**	Physical barrier to reduce the presence of seabirds in risk areas (For set and haul).	Small-scale purse seine in the south and west coast of Portugal. Forage fish.	Trials showed the effect of this device on activity of seabirds but with no bycatch events recorded for treatment and control sets. Reduction in numbers of certain seabird species like gulls and potentially for ACAP species like the Balearic Shearwater.	No reduction in target catch.	No human safety aspects to be considered.	Just need one person to be handled	1. Need to be assessed in areas of high occurrence of ACAP listed species 2. Also applicable to other fisheries (e.g., gillnets) 3. Effectiveness is more related to short distance of the device to the vessel	Oliveira *et al.* 2021; Almeida *et al.* 2023

Table 2. Mitigation methods for purse seine fisheries **not demonstrated to reduce albatross and/or petrel bycatch**. N/A: Not available.

Mitigation	Function	Testing	Findings	Effect on target catch	Human safety considerations	Additional benefits	Limitations / considerations	Source
Water spraying	Physical barrier for seabirds (For haul)	Inudstrial and small-scale. Gulf of California and Mar de Cortés, Mexico. Forage fish.	Preliminary trials may affect seabird presence in risk areas into the net (e.g., pelicans)	No reduction in target catch	No human safety aspects to be considered.	1. Needs to be handled by one person in a reduced crew (e.g., small-scale purse seine).	1. Absence of appropriate facilities and training would be harmful for seabirds (water cannon instead of water spraying). 2. The use of waters pumped from the same waste waters may contain edible oils can potentially affect seabird plumage through the loss of feather's architecture and waterproofing.	Suazo et al. 2017a
Escape windows of buoyline (Escape windows)	Sections without mounted buoys on the upper mainline allow diving seabirds to escape from the encircled purse seine gear (For set and haul).	Small-scale purse seine in the Humboldt Current, Chile. Anchovy	Occasional records show diving seabird species such as penguins and shearwaters using these gaps in the buoyline to move away from the risk area of the encircled net and its bunt.	No reduction in target catch	No human safety aspects to be considered.	Potentially beneficial to marine mammals and turtles.	1. It is necessary to assess the critical dimensions of windows and materials for the effective escape of non-target species and the efficient performance of gear on target species. 2. Concerns on potential scape of target fish species.	Auger Lancellotti 2019

Mitigation	Function	Testing	Findings	Effect on target catch	Human safety considerations	Additional benefits	Limitations / considerations	Source
Edible oil release	Sensorial / physical deterrent to keep away seabirds (For set)	Small-scale purse seine. Western Australia. Forage fish.	Trials demonstrated no effects of shark oil *vs* controls on seabird feeding activity of shearwaters.	No reduction in target catch	No human safety aspects to be considered	N/A	1. Oil should attract other seabird or non-target taxa to fishing operations. 2. Available re-supplies on board are needed. 3. The use of oil may have other detrimental effects (e.g., plumage).	Puglisi 2007
Sound	Sensorial deterrent to keep away seabirds (For set and haul).	Small-scale purse seine. Humboldt Current, Chile. Anchovy	Trials demonstrated effects of noise deterrents on the abundance of some sensitive seabird species (*e.g.*, gulls) but with latter habituation. No response by albatrosses and petrels.	No reduction in target catch	No human safety aspects to be considered but potentially health impact by noise pollution.	N/A	1.Recommended additional sound devices to influence in other seabird species than gulls with unexpected harmful effects on seabirds and crews. 2. Consideration of noise pollution when communal fishing exists (e.g., small scale purse seine).	Diez 2017
Laser	Sensorial deterrent to keep seabirds away from the net during set and haul.	Small-scale purse seine. Humboldt Current, Chile. Anchovy	Preliminary trials showed the use of laser keep seagulls temporarily away from the fishing (set and haul).	No reduction in target catch	No human safety aspects to be considered but potentially health impact (eye injury) by laser.	N/A	1. Operational limitations during daylight. 2. Potential detrimental effects on seabirds and crews must be considered and evaluated.	Diez 2017

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