National Plan of Action - 2016

Seabirds Mitigation Measures

in

Indonesian Tuna Longline Fisheries

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MMAF

2016

Contents

1. Introduction

As a member of the United Nations Food and Agricultural Organization (FAO), Indonesia commits to adopt the Code of Conduct for Responsible Fisheries (CCRF). One of the objectives of this code is to implement a national policy to conserve and manage fisheries responsibly fisheries. Indonesia government had implemented the objective into Indonesian Law No 45 in 2009, concerning Fisheries to ensure that each resource will be utilized sustainably.

Unintentionally, longline fisheries operating on the world's oceans catch seabirds, and there are concerns about the negative impact of seabird bycatch on their conservation status. The seabird bycatch has the possibility adversely impacting fishing productivity and profitability. Thus, there is an increasing need for conservation and management of seabird populations, resulting in more petitions for mitigation measures to reduce the incidental mortality of seabirds in longline fisheries.

According to the increasing attention to unintended catch of seabirds in longline fisheries and its potential negative impact on seabird populations, in March 1997, at the Twenty second Session of the Committee on Fisheries (COFI), a proposal was formulated that the Food and Agriculture Organization (FAO) organize an expert consultation to develop guidelines leading to a plan of action for reducing the incidental catch of seabirds. The *International Plan of Action for Reducing Incidental Catch of Seabirds in Longline Fisheries* (*IPOA-Seabirds*) was developed through the meeting of a Technical Working Group in Tokyo in March 1988 and the Consultation on the Management of Fishing Capacity, Shark Fisheries and Incidental Catch of Seabirds in Longline Fisheries held October 1998 and its preparatory meeting held in Rome July 1998.

Noting the recommendation of the IPOA-Seabirds, States in the waters of which longline fisheries are being conducted by their own or foreign vessels, and states that conduct longline fisheries on the high seas and in the exclusive economic zones (EEZ) of other States are encouraged to establish and implement *National Plans of Action for Reducing Incidental Catch of Seabirds* (*NPOA-Seabirds*) in efforts to scientifically analyse impacts of longline fisheries on seabirds and to develop mitigation measures suited to each specific fishery.

Therefore, the Republic of Indonesia is establishing its *National Plan of Action for Reducing Incidental Catch of Seabirds*. The NPOA-Seabirds will provide guidelines for reducing incidental catch of seabirds to all longline fisheries operating in the exclusive economic zone of Indonesia and to all Indonesian longline fisheries operating in waters outside the State. Before that, Indonesia already had a ministerial decree which regulates the

mitigation of seabirds caught seabird, this being in Marine Affairs and Fishery Ministerial Decree No 12/ 2012.

Indonesia undertakes to implement its NPOA-Seabirds through efforts to develop effective mitigation measures for reducing incidental catch of seabirds and, to this end, ensure support for implementation of the NPOA-Seabirds as well as stronger activity in education, training and publicity.

2. Current Status of Indonesian Fisheries Related to Incidental Catch of Seabirds

2.1. Fisheries Related to Incidental Catch of Seabirds

Indonesian tuna longline fisheries are classified small scale and industrial scale fisheries. The small scale usually operate wooden and fiberglass vessels under 60 GT with less than 20 crew. The industrial tuna longline fisheries operate fishing vessels with size mainly more than 60 GT. The fishing ground of these longline vessel is mixed, from coastal and offshore to high seas (Figure x). Generally fishing vessels 30 GT and above are managed by the central government while below 30 GT are managed by local governments. Depending upon target species and fishing methods, there are several types of industrial Indonesia tuna longline fishery, generally classified into three types: the surface, the middle, and the deep tuna longline. Accordingly, the *National Plan of Action for Reducing Incidental Catch of Seabirds* applies to all tuna longline fisheries.

2.1.1. Tuna Longline Fishery

There are large commercial fisheries for tunas throughout Indonesia, involving fleets from coastal states and distant water fishing nations, operating in coastal state EEZs and on the high seas. Two potential Indonesian tuna fishing grounds are the Pacific Ocean which includes Indonesian FMA 713-717 and the Indian Ocean which includes Indonesian FMA 572-573. The tuna fishing gear used in those fishing grounds commonly are purse seine, pole-and-line, troll line/hand line and tuna long line. Among the others fishing gear types targeting tuna only, tuna long liner is considered to have interaction with sea birds. Indonesian tuna long liners are mostly operated in Indian Ocean and the number of Indonesian tuna long line fleets registered in Indian Ocean Tuna Commission (IOTC) in 2014 was 1,282 vessels (Table 1).

Table 1. Registered Indonesian fishing vessels by size (GT) as reported to IOTC in 2014 (Irianto *et al*., 2015).

Size	Number
< 50	241
51 - 100	474
101 - 200	546
201 -300	3
301- 500	6
501 - 800	12
T o t a l	1,282

Distribution of tuna long line fishing activity as a result of RITF-CFRD's observer programs 2005-2014 which include between latitudes 0° and 34°S and longitudes 75° and 135°E, and also in the Banda Sea. Fishing activity mostly occurred within the area between 10° - 20°S and 105° - 120°E (Fig.1).

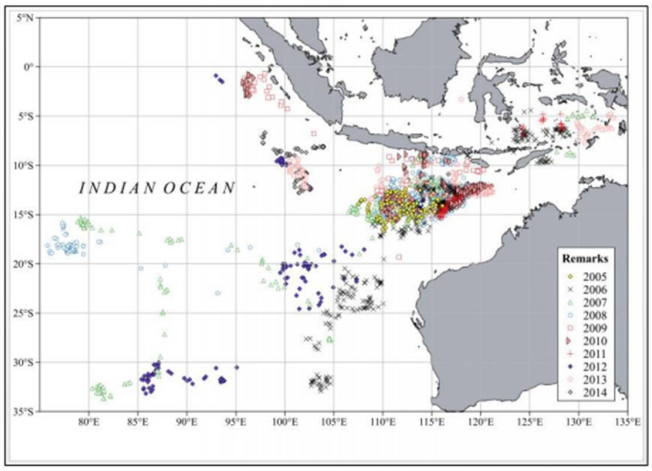


Figure 1. Spatial distribution of the observed sets from 2005 to 2014 (source: Observer Program data RITF, Benoa).

DGCF (2015) reported that the catch estimate of tuna long line fleets in 2014 was 44,163 ton comprised of yellowfin tuna (*Thunnus albacares*) 14,811 ton, bigeye tuna (*T.obesus*) 16,414 ton, skipjack tuna (Katsuwonus *pelamis*) 6,337 ton, albacore tuna (*T.alalunga*) and southern bluefin tuna (*T.maccoyii*) 1,063 ton. The RITF scientific observer program also reported that Indonesian tuna long line also caught bycatch including sharks, billfishes, marine turtle and sea birds (Irianto et al., 2015).

Studies of the relationships between seabirds and tuna long line fisheries in Indonesia to date are scarce with no quantitative information available. Lack of regulations and observer programs specifically related to seabird mortality are noticeable features of longline

fisheries in Indonesia. The following information has been gathered from the RITF scientific observer program. From a total of 638 sets of tuna long lines observed within latitudes 15-35^{o}S between 2005 to 2012 incidentally caught of 8 seabirds, 6 of which were released alive (2 being dead).

2.2. Status of Incidental Catch of Seabirds

Recently, it was reported that the world's seabirds are more threatened than any other group of birds. Of about 350 seabird species, 29% are globally threatened and a further 10% near threatened, while nearly half are known or suspected to be experiencing declines in their populations. The albatross family is especially imperilled, with 17 of 22 species threatened with extinction. Thus urgent measures for protecting and managing these species are required.

As a result of observer trips, bycatch of seabirds incidentally caught by Indonesian tuna longliners were mostly found in the waters of 10°~35°S and 75°~105°E, with most being black albatros, white albatroses, white albatroses, and gulls.

3. National Plan of Action Seabirds Mitigation Measures in Indonesian Tuna Longline Fisheries

3.1. Objective and Scope

3.1.1. Objective

Taking into account the IPOA-seabirds provided by FAO, the *National Plan of Action for Reducing Incidental Catch of Seabirds* (*NPOA-seabirds*) has been developed to enhance conservation and management measures of seabirds by promoting international cooperation to reduce the mortality of seabirds.

3.1.2. Scope

The NPOA-Seabirds applies to all Indonesian tuna longliners operating in the waters of Regional Fisheries Management Organizations (RFMOs) i.e. WCPFC, IOTC and CCSBT and the high seas, as well as Indonesian and foreign vessels which undertake longline fishering in the EEZ of Indonesia.

3.2. Mitigation Measures for Reducing Incidental Catch of Seabirds

3.2.1. IOTC and CCSBT Area of Competence

Implementation of mitigation measures for reducing incidental catch of seabirds in distant water fisheries is regulated by the *Distant Water Fisheries Development Act*, and fishers can be fined for breeching this regulation. Longliners operating in the waters under jurisdiction of IOTC and CCSBT, should sincerely implement mitigation measures for reducing incidental catch of seabirds in accordance with resolutions of IOTC and CCSBT. For those operating in the waters outside of the jurisdiction of IOTC and CCSBT, they are also encouraged to take appropriate measures to minimize incidental catch of seabirds.

The policy to reduce incidental catch of seabirds under Marine Affairs and Fisheries Ministerial Decree No 12 in 2012 regulates:

1. The longliners that fish south of 25°S have to implement effective mitigation to prevent the unintended catch of seabird.The mitigation consists of: 1) Night setting with minimum deck lighting; 2) bird-scaring lines (Tori lines); 3) weighted branchlines; 4) blue-dyed bait of squid; 5) control residual of waste; 6) use of line shooter
2. For a seabird bycaught alive in the process of longline operation, the fishers have to release it alive
3. For a seabird bycaught and dead in the process of longline operation, the fishers have to report it to the head of the port for reporting to DGCF

3.2.2. Other Areas

For longliners that operate in the waters outside the jurisdiction of RFMOs, within wasters managed by RFMOs but not yet officially established, or within the EEZ of Indonesia, they are encouraged to voluntarily implement and improve mitigation measures for reducing seabird bycatch.

3.3. Data Collection and Analysis

Data on seabirds incidentally bycaught by tuna longline fisheries should be reported in the bycatch logbook in accordance with the Regulations on Reporting of Fishing Operations in the Indonesian EEZ and high seas. This logbook should be submitted monthly to the Ministry of Marine Affairs and Fishery (MMAF), along with the tuna and tuna-like species logbook. Data reported by fishers are collected and analyzed by Directorate General of Captured Fisheries (DGCF) and submitted to the competent RFMOs as requested.

As for incidental bycatch of seabirds by the coastal and offshore fisheries in the EEZ of Indonesia, there is a lack of information, and a concrete plan for data collection on seabird bycatch has not been developed so far. However, in an effort to enhance conservation of seabirds, Indonesia is planning to monitor incidental catch of seabirds in these waters.

To improve data on seabird bycatch, the DGCF has published and distributed the Field Guide to Bycatch Species in Indonesian Tuna Longliners". However, there remains a limit to the collection of accurate data on seabird bycatch. Because fishers are not experts on seabirds, the data may contain inaccuracies such as of species identification. To overcome such problems this problem, Indonesia is implementing scientific observer programs to improve the quality of data.

For assessing the status of incidental mortality of seabirds and the effectiveness of mitigation measures, it is necessary to collect correct and reliable data. Hence, longline vessels are encouraged to make the following efforts for collection of the best data.

1. Fishers are encouraged to record and report the detailed data, including name of species, number of bycatch, fate (dead/alive), whether released alive or not, etc.
2. Longliners fishing in the waters of RFMOs jurisdiction shall record and report relevant data in a logbook in accordance with resolutions of the competent RFMOs.
3. If it is impossible to identify the species of seabirds, fishers should take pictures of the seabirds and send them to the DGCF.
4. Scientific observers onboard should collect as much relevant data on seabirds bycaught incidentally as possible and make efforts to collect data on seabirds observed near the fishing vessel as well.

3.4. Research and Development

Indonesia will do research to develop mitigation measures best suited to Indonesian longline vessels for reducing incidental catch of seabirds. Indonesia agrees there is an urgent need for an effective conservation and management plan for seabirds. Although Indonesia is presently in the early stages of developing the research system on seabirds, Indonesia will establish the infrastructure of Research and Development (R&D) and promote its medium-to-longterm plan. The R&D plan for reducing incidental catch of seabirds will be developed taking into account the following objectives.

1. To develop the most effective and practical seabird deterrent devices
2. To develop devices that respect extensive experience of fishers
3. To develop devices with the cost minimized but safety maximized

3.5. Assessment

The purpose of the NPOA-Seabirds assessment is to monitor the status of seabird bycatch by Indonesian longline fisheries and to assess the progress of implementation, effectiveness and development.

To assess the NPOA-Seabirds, Indonesia will regularly monitor longline fisheries to determine if a problem exists with respect to incidental catch of seabirds. If a problem exists, Indonesia will adopt a revised edition of the NPOA-Seabirds and continue its effort to reduce incidental catch of seabirds.

3.6. Education, Training and Publicity

In an effort to raise awareness regarding conservation and management of seabirds and to disseminate mitigation measures regulated by RFMOs to fishers, the Research Center and Development of Fisheries (RCDF) of Indonesia conducts education/training for operators of fishing vessels prior to departure on trips. In addition, the RCDF carries out a variety of publicity activities including international workshops attended by both Indonesian and international experts on seabirds.

To help fishers understanding bycatch better, the RCDF, helped by Research Institute for Tuna Fisheries (RITF) has translated the identification card provided by IOTC to be distributed and used easily and conveniently on board, which is also offered to governmental and educational organizations and the general public.

To effectively implement the NPOA-Seabirds, the following activities will be taken:

1. Develop and improve education/training programs for fishers
2. Revise the field guide on bycatch species, for publication and dissemination
3. Strengthen of public relations

3.7. International Cooperation

Indonesia will fully implement its NPOA-Seabirds for reducing incidental catch of seabirds in longline fisheries and make efforts to develop and disseminate effective and practical mitigation measures. In addition, Indonesia will actively cooperate with the other states and the international specialist organzations with much technical knowledge and experiences of seabirds.

3.8. Others

The Republic of Indonesia will continue to develop and implement its National Plan of Action for Reducing Incidental Catch of Seabirds in tuna Longline Fisheries based upon regular assessment.

Annex 1. IOTC Seabird Identification Card Translation Draft

	ENGLISH		INDONESIA
	COUVERTURE / COVER		
	SEABIRD IDENTIFICATION CARDS		Kartu Identifikasi Burung Laut
	for Fishing Vessels operating in the Indian Ocean		Untuk kapal perikanan yang beroperasi di Samudra Hindia
	PAGE 1		
	These seabird identification cards are produced as part of a series of awareness materials developed by the Indian Ocean Tuna Commission in order to improve the reporting of interactions between vessels targeting species under the management mandate of the IOTC and seabirds.		Kartu identifikasi burung laut ini dibuat oleh *Indian Ocean Tuna Commission* (IOTC) dan Loka Penelitian Perikanan Tuna. Kartu identifikasi ini merupakan bagian dari materi kampanye untuk meningkatkan kualitas pelaporan terkait interaksi burung laut dengan kapal-kapal yang menargetkan spesies yang pengelolaannya berada di bawah mandat pengelolaan IOTC.
	This publication was made possible through financial assistance provided by <partner>.		Publikasi ini dapat disusun berkat dukungan dana dari <mitra>
	For further information contact:		Untuk Informasi lebih lanjut, kontak:
	Acknowledgements: We gratefully acknowledge contributions from Birdlife International and the Secretariat of ACAP for the development of these seabird identification cards.		Ucapan terima kasih : Kami ucapkan terima kasih atas kontribusi dari Birdlife International dan sekretariat ACAP untuk penyusunan kartu identifikasi burung laut ini
	Illustrations by Peter Hayman, reproduced with permission of Random House Struik Publishers from Sasol Birds of Southern Africa.		Ilustrasi oleh Peter Hayman, diperbanyak dengan izin yang diberikan oleh Random House Struik Publishers dari buku *Sasol Birds of Southern Africa*.
	Photos courtesy of Dr. Ross Wanless, Projeto Albatroz/Fabiano Peppes, Albatross Task Force/BirdLife South Africa.		Foto dari Dr. Ross Wanless, Projeto Albatroz/Fabiano Peppes, Albatross Task Force/BirdLife South Africa.
	©Copyright: IOTC, 2011. Design and layout: Julien Million.		©Hak cipta: IOTC, 2011. Desain dan Tata Letak: Julien Million.
	PAGE 2		
	Seabirds are species that derive their sustenance primarily from the ocean and which spend the bulk of their time (when not on land at breeding sites) at sea. Seabirds are characterised as being late to mature and slow to reproduce; some do not start to breed until they are ten years old. To compensate for this, seabirds are long-lived, with natural adult mortality typically very low. These traits make any increase in human-induced adult mortality potentially damaging for population viability, as even small increases in mortality can result in population declines.		Burung laut adalah jenis burung yang mencari makanan di laut lepas dan menghabiskan sebagian besar waktunya (ketika tidak berkembang biak di darat) di laut. Burung laut memerlukan waktu yang relatif lama untuk menjadi dewasa dan berkembang biak; beberapa jenis bahkan belum mulai berbiak hingga berusia sepuluh tahun. Sebagai kompensasinya, burung laut berumur panjang, dengan tingkat kematian alami burung dewasa yang rendah. Berdasarkan sifat-sifat ini, kenaikan tingkat kematian burung tidak terjadi secara alami, namun campur tangan manusia, akan berpotensi merusak kelangsungan hidup populasinya. Bahkan sekecil apapun gangguan manusia dapat mengakibatkan penurunan populasi.

	Eight seabird families occur within the Indian Ocean Tuna Commission (IOTC) area of competence, either regularly or as breeding populations. Of these, the Procellariiformes (albatrosses and petrels) are the species most susceptible to being caught as bycatch in longline fisheries, and therefore are most susceptible to direct interactions with IOTC fisheries.		Delapan famili burung laut berada dalam wilayah kerja Indian Ocean Tuna Commission (IOTC), baik secara rutin ataupun hanya sebagai populasi sementara yang berkembang biak di daerah tersebut. Sebagian diantara nya, yaitu anggota dari Ordo Procellariiformes (albatros dan petrel) adalah spesies yang paling rentan tertangkap secara tidak sengaja pada perikanan pancing rawai. Oleh karena itu, albatros dan petrel adalah spesies yang sangat rentan terhadap dampak langsung kegiatan perikanan IOTC.
	These cards will help observers and fishers to identify seabirds caught by fishing vessels operating in the IOTC area of competence. Each card contains the common and scientific names of the seabird, its conservation status (CR - critically endangered, EN - endangered, VU - vulnerable, NT - near threatened), some information about its adult size (wingspan) and habitat as well as some key features for its identification. Distribution maps show the approximate range for each species in the IOTC area of competence.		Kartu ini akan membantu pemantau (observer) dan nelayan untuk mengidentifikasi burung laut yang tertangkap di kapal-kapal perikanan yang beroperasi di wilayah kerja IOTC. Kartu ini berisi nama umum dan ilmiah burung laut, status konservasinya (CR - kritis, EN - terancam punah, VU - rentan, NT - hampir terancam), beberapa informasi tentang ukuran dewasa (bentangan sayap), habitat dan beberapa ciri kunci untuk identifikasi. Peta distribusi menunjukkan perkiraan daerah lintasan setiap spesies di wilayah kompetensi IOTC.
	Identify, record, photograph and report every seabird interaction with your vessel.		Identifikasi, catat, foto dan laporkan setiap interaksi burung laut di kapal Anda
	PAGE 3		
	Albatrosses		Albatros
	Albatrosses' nostrils are NOT fused into a tube and are clearly visible as two separate openings either side of the bill. They are large birds with very long wings compared to body length.		Lubang hidung albatros TIDAK menyatu menjadi satu saluran dan jelas terlihat sebagai dua bukaan yang terpisah pada kedua sisi paruh. Albatros adalah burung besar dengan sayap yang sangat panjang dibandingkan dengan panjang tubuhnya.
	Genus Diomedea		Genus Diomedea
	Four species occur in the IOTC area. World's biggest seabirds, with very large heavy bills and wingspan. All-white backs unique amongst albatrosses (but note young Wandering Albatrosses have dark backs).		Empat spesies dari genus ini ada di wilayah IOTC. Merupakan burung laut terbesar di dunia, dengan paruh yang sangat besar dan berat serta bentangan sayap yang lebar. Punggung yang seluruhnya berwarna putih menjadi pembeda dari albatros lainnya (namun, albatros kelana (*Diomeda exulans*), pada saat muda, punggungnya berwarna gelap).
	Genus Phoebetria		Genus Phoebetria
	Two species of all-dark albatrosses with clear white eye-ring and colourful, fleshy line on bills.		Terdiri atas dua spesies yang keduanya berwarna tubuh gelap, lingkar mata berwarna putih dan terdapat garis berdaging pada paruhnya.
	Beware: relatively small, slender bills and small, separate nostrils allow this group to be separated from the Giant Petrels, which are (mostly) also all brown. Giant Petrels have large, bulky bills with a large, fused nostril tube on the top of their bill.		Hati-hati: jenis ini berukuran relatif kecil, paruh ramping dan kecil, lubang hidung yang terpisah menjadi salah satu pembeda burung ini dengan burung petrel raksasa yang (kebanyakan) juga berwarna gelap. Burung petrel raksasa berparuh besar dan tebal dengan lubang hidung berbentuk tabung yang menyatu di atas paruhnya.
	Genus Thalassarche		Genus Thalassarche

	Medium and small albatrosses with wingspans ranging from 2 – 2.5 m. All have dark backs, but Shy Albatrosses backs fade to grey (never white) over time.	Albatros berukuran sedang dan kecil dengan bentangan sayap 2 – 2.5 m. Seluruhnya berpunggung gelap, namun punggung albatros pemalu memudar menjadi abu-abu (tidak pernah putih) dari waktu ke waktu.
	PAGE 4	
	Wandering Albatross	Albatros Kelana/ Wandering Albatross
	Wingspan: 2.5 - 3.5 m	Bentangan sayap: 2.5 - 3.5 m
	Infrequent in shelf waters	Jarang terlihat di perairan dangkal
	Common in southern latitudes year-round	Lazim terlihat pada daerah lintang selatan sepanjang tahun
	NO black cutting edge on bill	Bagian ujung paruh tidak berwarna hitam
	Beware: higly variable, with birds getting whiter with age, starting nearly all dark to ending nearly all white.	Perhatikan: Perubahan morfologi yang signifikan sepanjang siklus hidupnya, semakin tua umur seekor burung, maka warna bulunya menjadi semakin putih. Warna gelap ditemukan pada burung berusia muda, dan warna putih hampir-keseluruhan ditemukan pada burung yang berusia tua.
	Plumage changes with age	Warna bulu berubah seiring dengan umur
	No black cutting edge	Tidak ada ujung bulu berwarna hitam
	PAGE 5	
	Amsterdam Albatross	Albatros Amsterdam/ Amsterdam Albatross
	Wingspan: 2.8 - 3.4 m	Bentangan sayap: 2.8 - 3.4 m
	Infrequent in shelf waters	Jarang terlihat di perairan dangkal
	Extremely rare, but generally between 20-40°S	Sangat jarang, namun biasanya diantara 20-40° Lintang Selatan
	black-brown all over, except face, underwing and belly	Seluruh tubuh berwarna hitam-coklat kecuali wajah, sayap bawah dan perut
	No white on upper wings	Pada sayap bagian atas tidak terdapat corak putih
	Black cutting edge on bill	Bagian ujung paruh berwarna hitam
	Beware: young Wandering Albratross are nearly identical, but do not have black cutting edge on bill.	Perhatikan: Burung berusia muda sangat terlihat mirip satu dengan lainnya, namun tidak memiliki ujung berwarna hitam pada paruhnya
	Black cutting edge	Ujung berwarna hitam
	PAGE 6	
	Northern Royal Albatross	Albatros Raja-utara/ Northern Royal Albatross
	Wingspan: 2.9 - 3.4 m	Bentangan sayap: 2,9 - 3,4 m
	Infrequent in shelf waters	Jarang terlihat di perairan dangkal

	Common in southern latitudes year-round		Umum pada daerah lintang selatan sepanjang tahun
	White back and white tail		Punggung dan ekor berwarna putih
	No white on upperwings		Pada sayap bagian atas tidak terdapat corak putih
	Black cutting edge on bill		Ujung paruh berwarna hitam
	Beware: young birds have dark outer tail feathers, and may have some dark feathers on head and back. Adults are indistinguishable from juvenile Southern Royal Albatrosses.		Perhatikan: Burung muda memiliki corak warna gelap pada bagian bulu ekornya, dan bisa memiliki bulu berwarna gelap pada bagian kepala dan punggungnya. Burung dewasa hampir tidak dapat dibedakan dengan burung Albatros Raja-Selatan remaja.
	Black cutting edge		Ujung berwarna hitam
	PAGE 7		
	Southern Royal Albatross		Albatros Raja-selatan/ Southern Royal Albatross
	Wingspan: 2.9 - 3.4 m		Bentangan sayap: 2,9 - 3,4 m
	Infrequent in shelf waters		Jarang terlihat di perairan dangkal
	Common in southern latitudes year-round		Umum terlihat di daerah lintang selatan sepanjang tahun
	Front of wings (leading edge) white		Bagian terdepan sayap berwarna putih
	Whitening on wings starts from leading edge, not from middle of wing		Warna bulu pada sayap mulai memutih mulai dari bagian depan, bukan dari bagian tengah sayap
	Black cutting edge on bill		Bagian ujung paruh berwarna hitam
	Beware: Juveniles Southern Royal Albatrosses are indistinguishable from adults Northern Royal Albatrosses.		Perhatikan: Burung Albatros Raja-Selatan remaja hampir tidak dapat dibedakan dengan burung dewasa Albatros Raja-Utara.
	Black cutting edge		Ujung berwarna hitam
	PAGE 8		
	Sooty Albatross		Albatros Hitam/ Sooty Albatross
	Wingspan: 2 m		Bentangan sayap: 2 m
	Restricted to deep waters		Terbatas di perairan dalam
	Year-round		Sepanjang tahun
	Uniformly brown from head to tail, except white eye-ring		Seluruh badan berwarna cokelat, terkecuali warna putih disekeliling matanya
	Creamy-yellow, fleshy line on lower bill (this may fade to colourless/brown when dead, so not always a reliable feature)		Paruh bagian bawah memiliki corak bergaris berwarna kuning lembut (Corak ini dapat berganti menjadi tidak berwarna/cokelat ketika mati, oleh karena itu hal ini bukanlah penanda yang utama)
	Yellow line		Garis kuning

PAGE 9			
	Light-mantled Albatross		Albatros Abu-abu/ Light-mantled Albatross
	Wingspan: 2 m		Bentangan sayap: 2 m
	Restricted to deep waters		Terbatas di perairan dalam
	Year-round		Sepanjang tahun
	Dark all over, but back noticeably paler than rest of body, and, head and wings noticeably darker than other parts		Keseluruhan badan berwarna gelap, namun warna pada punggung terlihat lebih pucat dibandingkan dengan warna bagian tubuh lainnya. Selain itu, kepala dan sayapnya berwarna lebih gelap dibandingkan bagian tubuh lainnya.
	Has a pale blue, fleshy line on lower bill (this may fade to colourless/brown when dead, so not always a reliable feature)		Paruh bagian bawah memiliki corak bergaris berwarna biru (Corak ini dapat berganti menjadi tidak berwarna/cokelat ketika mati, oleh karena itu hal ini bukanlah penanda yang utama)
	Blue line		Garis biru
PAGE 10			
	Grey-headed Albatross		Albatros Kepala Abu-abu/ Grey-headed Albatross
	Wingspan: 2.2 m		Bentangan sayap: 2,2 m
	Rare on continental shelf		Sangat jarang terlihat di perairan dangkal
	Mainly winter		Terutama musim dingin
	Adult		Dewasa
	Dark-grey head and neck		Kepala dan leher berwarna abu-abu tua
	Yellow line on top of upper AND underside of lower bills		Corak garis berwarna kuning pada bagian atas dari paruh atas dan bagian bawah dari paruh bawah
	Underwings have thick black leading edge		Garis ujung bulu sayap bagian dalam memiliki corak hitam tebal
	Beware: Yellow-nosed Albatross has yellow line only on upper bill		Perlu diperhatikan: Burung albatros hidung kuning memiliki garis kuning hanya pada paruh atas
	Juvenile		Remaja
	All-grey head but white on face		Seluruh kepala berwarna abu-abu kecuali pada wajah terdapat warna putih
	No yellow on bill		Tidak ada garis kuning pada paruh
	All-dark underwings		Bagian bawah sayap seluruhnya berwarna gelap
	Beware: Juvenile Black-browned Albatross has all-dark underwings and grayish head with white on face and all-dark bill, but bill tip is very visibly darker		Perhatikan: Remaja albatros alis hitam memiliki bulu berwarna gelap pada keseluruhan bagian dalam sayap dan kepala berwarna abu-abu dengan warna putih pada bagian wajah dan paruh berwarna gelap, bagian ujung paruh berwarna lebih gelap dari keseluruhan paruh.
	Juvenile		Remaja

	Adult		Dewasa
	Yellow lines		Garis kuning
	PAGE 11		
	Indian Yellow-nosed Albatross		Albatros Hidung-kuning Hindia/ Indian Yellow-nosed Albatross
	Wingspan: 1.8 - 2 m		Bentangan sayap: 1,8 - 2 m
	Common in shelf waters		Umum terlihat di perairan dangkal
	All year		Sepanjang tahun
	White head and neck, some with light gray on sides of head		Kepala dan leher berwarna putih. Beberapa memiliki corak kelabu muda pada sisi kepalanya.
	Yellow line on upper bill only		Garis kuning hanya pada paruh atas
	Beware: Atlantic Yellow-nosed Albatross (T. chlororhynchos, not illustrated) is rare in IOTC area, and has dark grey head with contrasting white cap (top of head)		Perhatikan: Albatros Hidung-kuning Hindia (*T. chlororhynchos*, tidak diilustrasikan) sangat jarang ada di area IOTC. Kepala burung ini berwarna kelabu tua dengan bagian atas kepala berwarna putih yang kontras.
	Yellow line only on upper bill		Garis kuning hanya pada paruh atas
	PAGE 12		
	Shy-type Albatross		Albatros Pemalu/ Shy-type Albatross
	Wingspan: 2.1 - 2.6 m		Bentangan sayap: 2,1 - 2,6 m
	Common		Umum terlihat
	Mainly winter		Terutama musim dingin
	Adult		Dewasa
	Very long wings with only thin black margins on underwing, otherwise completely white		Ukuran sayap sangat lebar, dengan garis tepi berwarna hitam pada sayap bagian dalam, selebihnya berwarna putih
	Small black notch in armpit		Takik kecil hitam pada bagian ketiak
	Largest of the Thalassarche group		Merupakan yang terbesar di kelompok Thalassarche
	Large grey bill with yellow tip only		Paruh abu-abu besar dengan ujung berwarna kuning
	Juvenile		Remaja
	Underwing pattern unique and same as for adult		Pola sayap bagian dalam terbilang unik, demikian pula halnya pada burung dewasa
	Beware: juveniles have variable amounts of grey on head and could be confused with juvenile Grey-headed or Black-browed Albatrosses, but these two have dark underwings.		Perhatikan: Remaja memiliki corak abu-abu pada kepalanya, serupa dengan Remaja albatros kepala abu-abu atau albatros alis hitam namun tidak memiliki corak gelap pada sayap bagian dalamnya.
	Black thumb print		Terdapat bercak hitam pada bagian dalam sayap yang dekat dengan bagian dada atas

PAGE 13			
	Black-browed Albatross		Albatros Alis-hitam/ Black-browed Albatross
	Wingspan: 2.1 - 2.5 m		Bentangan sayap: 2,1 - 2,5 m
	Common		Umum
	Adult mostly winter		Dewasa umumnya pada musim dingin
	Adult		Dewasa
	All-orange bill with pinkish tip diagnostic		Paruh berwarna jingga dengan ujung berwarna merah muda
	Dark around eye creating the ‘black-brow'		Sekeliling mata berwarna gelap, memberikan kesan 'alis hitam'
	Juvenile		Remaja
	Dark feathers around eye reduced but always present		Bulu bercorak gelap di sekeliling mata berkurang, namun tetap ada
	Bill lightens toward orange with age, all intermediate stages have dark tip to bill		Paruh semakin berwarna jingga seiring dengan umur, sementara pada fase antara paruh memiliki ujung berwarna hitam
	Beware: juvenile Grey-headed Albatross which has more grey on head and lacks dark eye. Shy and White-capped Albatross have much larger, deeper bill and white underwing.		Perhatikan: Remaja Albatros Kepala Abu-abu memiliki warna abu-abu yang lebih banyak pada kepalanya dan tidak memiliki mata yang gelap. Albatros pemalu dan Albatros topi putih memiliki paruh yang lebih besar serta sayap bagian dalam yang berwarna putih.
	Immature		Belum/Pra dewasa
	Dark tip		Ujung berwarna hitam
	Broad leading edge		Ujung depan yang lebar
	Adult		Dewasa
	Juvenile		Remaja
PAGE 14			
	ALBATROSSES		Albatros
	nostrils not fused into tube and clearly visible as two separate openings either side of the bill.		Lubang hidung albatros tidak bersatu menjadi satu saluran dan jelas terlihat sebagai dua bukaan yang terpisah pada kedua sisi paruh.
	largest species length (20cm)		Panjang hidung jenis terbesar (20cm)
	smallest species length (10cm)		Panjang hidung jenis terkecil (10cm)
	PETRELS		Petrel
	nostrils are fused in one tube on top of the bill.		Lubang hidung bersatu dalam satu saluran di atas paruh
PAGE 15			

	Petrels		Petrel
	Petrels can be confused with shearwaters, however petrels all have short, stout, ‘chunky’ bills, whereas shearwater always have long, slender bills.		Burung petrel seringkali diduga sebagai burung penggunting laut. Perbedaannya adalah semua burung petrel memiliki paruh yang pendek dan gemuk, sementara burung penggunting laut memiliki paruh yang panjang dan ramping
	Genus Macronectes		Genus Macronectes
	Two species of large petrels, same size as medium albatrosses. Large, heavy bills with pronounced hook and long, fused nostril tubes. Usually dark-brown, but increasingly pale from head down with age. Southern Giant Petrel has spectacular white morph with black flecks on pure white feathers. Only bill tip colour can be used to separate these two species.		Dua spesies burung petrel memiliki kesamaan ukuran dengan burung albatros berukuran sedang, seperti paruh yang besar dengan ujung paruh yang jelas, serta lubang hidung yang menyatu dengan paruh. Umumnya berwarna cokelat gelap, namun seiring dengan umur warna dapat berubah menjadi lebih pucat. Petrel raksasa selatan memiliki gabungan bintik yang indah antara putih dengan hitam pada bulu putihnya. Hanya ujung paruh yang bisa digunakan sebagai pembeda pada kedua jenis burung ini.
	Genus Procellaria		Genus Procellaria
	The largest members of the petrel family aside from the two Giant Petrel species. Two species, commonly occur in subtropical and Southern Ocean waters of the IOTC area. Both actively forage at night and can dive very deep. They are usually responsible for returning baited longline hooks to the surface, which albatrosses will then ‘steal’ from them and get hooked. Because of their excellent night vision and strong diving abilities, these species are amongst the most difficult to prevent from being caught on longline hooks.		Anggota terbesar dari famili Petrel disamping kedua jenis petrel raksasa. Kedua jenis ini umum ditemukan pada perairan subtropis dan perairan bagian selatan dari daerah IOTC. Keduanya merupakan jenis nokturnal dan mampu menyelam sangat dalam. Mereka adalah burung-burung yang menyebabkan umpan pada kail rawai kembali ke permukaan air, yang kemudian burung albatros akan memakan umpan dan pada akhirnya terkena kait tersebut. Karena kemampuan penglihatan mereka pada malam hari serta kemampuan menyelamnya, kedua jenis ini termasuk yang paling sulit dicegah dari kematian yang disebabkan oleh tersangkut pada kail rawai.
	PAGE 16		
	Southern Giant Petrel		Petrel Raksasa Selatan/ Southern Giant Petrel
	Wingspan: 1.5 - 2.1 m		Bentangan sayap: 1,5 - 2,1 m
	Common		Umum ditemukan
	Year-round		Sepanjang tahun
	Albatross-sized		Seukuran dengan burung Albatros
	Huge bill with greenish tip		Paruh yang besar dengan ujung berwarna kehijauan
	Bill tip does not contrast strongly with the rest of the bill		Warna pada ujung paruh tidak terlihat kontras
	Nasal tubes are fused into one long tube on top of bill		Saluran hidung menyatu menjadi sebuah tabung panjang di atas paruh
	Plumage pales with age		Warna bulu memudar seiring usia
	Green tip		Ujung berwarna hijau

	White phase		Fase putih
PAGE 17			
	Northern Giant Petrel		Petrel Raksasa Utara/ Northern Giant Petrel
	Wingspan: 1.5-2.1 m		Bentangan sayap: 1,5-2,1 m
	Common		Umum ditemukan
	Year-round		Sepanjang tahun
	Albatross-sized		Seukuran dengan burung Albatros
	Huge bill with red-brown tip		Paruh besar dengan ujung berwarna merah-kecoklatan
	Bill tip contrasts with the rest of the bill		Warna pada ujung paruh terlihat kontras
	Nasal tubes are fused into one long tube on top of bill		Saluran hidung menyatu menjadi sebuah tabung panjang di atas paruh
	Plumage pales with age		Warna bulu memudar seiring usia
	Adult		Dewasa
	Juvenile		Remaja
	Red-brown tip		Ujung berwarna merah-coklat
PAGE 18			
	White-chinned Petrel		Petrel Dagu-putih/ White-chinned Petrel
	Wingspan: 1.4 m		Bentangan sayap: 1,4 m
	Most common petrel		Burung petrel yang paling sering ditemukan
	All year		Sepanjang tahun
	All dark with white chin		Keseluruhan badan berwarna gelap dengan dagu berwarna putih
	Ivory bill with black ‘saddle’		Paruh berwarna gading dengan 'pelana' berwarna hitam
	Occasionally more extensive white chin with patch on head or on belly.		Terkadang dagu putih yang luas dengan corak di bagian kepala atau perut
	Beware: closely related Spectacled Petrel (P. conspicillata) is extremely rare in IOTC area, and easily recognizable with white, large circles around eyes and dark bill tip.		Perhatikan: Burung petrel berkacamata (P. Conspicillata) yang sangat mirip dengan petrel dagu-putih sangatlah langka di daerah IOTC, dan sangat mudah dikenali dengan lingkaran putih di sekeliling matanya serta ujung paruh yang berwarna gelap.
	Spectacled petrel		Petrel berkacamata
	White chin		Dagu putih
PAGE 19			

	Grey Petrel		Petrel Abu-abu
	Wingspan: 1.4 m		Bentangan sayap: 1,4 m
	Rare		Langka
	Year-round		Sepanjang tahun
	Combination of uniform grey above and clean white body below		Kombinasi dari warna abu-abu pada tubuh bagian atas dan putih pada tubuh bagian bawah
	Grey underwings		Bagian bawah sayap berwarna abu-abu
	Pale bill with dark tip		Paruh pucat dengan ujung hitam
	Dark tip		Ujung berwarna gelap
	PAGE 20		
	Great-winged Petrel		Petrel Sayap-besar/ Great-winged Petrel
	Wingspan: 1 m		Bentangan sayap: 1 m
	Common		Umum ditemukan
	Austral Summer		Musim panas pada belahan bumi selatan
	Mottled, grey-white blaze around all-dark bill diagnostic		Berbintik dengan corak abu-abu putih pada paruh yang hitam
	Beware: Sooty Shearwater, which has a silvery underwings. Many all-dark petrels could cause confusion, but ranges do not overlap much, with this species seldom occuring north of 20°S.		Perhatikan: Burung penggunting-laut Sooty memiliki warna keabuan pada sayap bagian dalamnya. Banyak dari petrel hitam menyebabkan kesalahan pada identifikasi, namun tidak banyak tumpang tindih dikarenakan jenis ini jarang ditemukan pada bagian utara dari 20° lintang selatan
	Dark bill		Paruh hitam
	PAGE 21		
	Cape (Pintado) Petrel		Petrel Tanjung/ Cape (Pintado) Petrel
	Wingspan: 0.9 m		Bentangan sayap: 0,9 m
	Common		Umum ditemukan
	Austral Winter		Musim dingin pada belahan bumi selatan
	Mottled black-and-white patterns on wings and back		Berbintik dengan corak hitam dan putih pada sayap dan punggung
	Seldom recorded as bycatch in longline fisheries		Jarang dilaporkan sebagai tangkapan sampingan pada perikanan rawai
	PAGE 22		
	Shearwaters		Burung Penggunting-laut

	Shearwaters can be confused with petrels, however shearwaters always have long, slender bills whereas petrels all have short, stout, 'chunky' bills.	Burung Penggunting-laut sering diduga sebagai burung petrel, namun burung penggunting-laut memiliki memiliki paruh yang lebih panjang dan ramping, sementara burung petrel memiliki paruh yang pendek dan gemuk
	Genus Puffinus	Genus Puffinus
	Four species common in the region. Small to medium sized seabirds, with long wings. Upperwings dark brown to black, and underwings white to dark brown.	Sebanyak empat jenis umum ditemukan di daerah IOTC. Burung laut berukuran kecil hingga sedang, dengan sayap yang lebar. Sayap bagian atas berwarna cokelat tua hingga hitam, dan sayap bagian bawah berwarna putih hingga cokelat tua.
	PAGE 23	
	Sooty Shearwater	Penggunting-laut Hitam/ Sooty Shearwater
	Wingspan: 1 m	Bentangan sayap: 1 m
	Common	Umum ditemukan
	All year	Sepanjang tahun
	Silvery underwing	Sayap bagian bawah berwarna keabuan
	Beware: Short-tailed Shearwater, which is confined to the south east of the Indian Ocean and small proportion have obvious silvery underwings	Perhatikan: Burung penggunting-laut ekor pendek persebarannya terbatas hingga tenggara dari Samudera Hindia, sebagian kecil dari populasi memiliki warna keabuan pada sayap bagian dalam
	Underwing silvery	Sayap bagian bawah berwarna keabuan
	PAGE 24	
	Great Shearwater	Penggunting-laut Besar/ Great Shearwater
	Wingspan: 1 - 1.2 m	Bentangan sayap: 1 - 1,2 m
	Common in western Indian Ocean, absent in eastern Indian Ocean	Umum ditemukan di bagian barat Samudera Hindia, tidak ditemukan di bagian timur Samudera Hindia
	Scarce mid-winter	Jarang ditemukan di pertengahan musim dingin
	Dark, smudgy patch on white belly	Bercak keabuan gelap pada perut yang berwarna putih
	Narrow pale neck-band	Warna putih pucat di sekeliling lehernya
	White "C" on rump	Terdapat "C" berwarna putih pada pantat
	White "C"	"C" putih
	Brown patch on belly	Bercak kecoklatan pada bagian perut
	Clear black cap	kepala bagian atas berwarna hitam, menyerupai 'topi'
	PAGE 25	

	Flesh-footed Shearwater		Penggunting-laut Kaki Lebar/ Flesh-footed Shearwater
	Wingspan: 1 m		Bentangan sayap: 1 m
	Northern Indian Ocean during austral winter		Bagian utara Samudera Hindia ketika musim dingin pada bagian belahan bumi selatan
	South east Indian Ocean in austral summer		Bagian tenggara Samudera Hindia ketika musim panas pada bagian belahan bumi selatan
	Pale pinkish feet		Kaki bewarna merah muda pucat
	Uniformly dark-brown plumage		Bulu berwarna Cokelat tua
	Pale bill with dark tip.		Paruh pucat dengan ujung berwarna hitam
	Pale feet		Kaki pucat
	Dark-tipped pale bill		Ujung paruh berwarna hitam
	PAGE 26		
	Wedge-tailed Shearwater		Penggunting-laut Ekor Runcing/ Wedge-tailed Shearwater
	Wingspan: 1 m		Bentangan sayap: 1 m
	Common in tropical waters		Umum ditemukan di perairan tropis
	Year around		Sepanjang tahun
	When spread open, tail forms ‘V’, or wedge - thus its common name Wedge-tailed Shearwater		Ketika dikembangkan, ekor dari burung membentuk huruf 'V' sehingga terlihat runcing , oleh karena itu jenis ini dinamakan burung penggunting-laut ekor-runcing
	Beware: Great-winged Petrel (see bill shape) and Sooty Sheaterwater (see underwing pattern)		Perhatikan: Penggunting-laut besar (lihat bentuk paruh) dan Penggunting-laut hitam (lihat pola sayap bagian dalam)
	Pale-bellied morph rare in the Indian Ocean		Burung dengan perut berwarna pucat langka ditemukan di Samudera Hindia
	PAGE 27		
	Boobies & Gannets		Angsa-batu dan Burung Gannet
	Boobies and gannets (Sulids) are large and common tropical and subtropical birds that tend to occur within 200km of land. Confusion with albatrosses unlikely: all Sulids have simple, very pointed bills which lack obvious hooked end and prominent nostrils of albatrosses.		Angsa-batu dan Burung Gannet merupakan burung tropis dan subtropis berukuran besar yang umum ditemukan dalam batasan 200 km dari daratan. Jarang adanya kesalahan identifikasi dengan burung albatros dikarenakan semua burung gannet memiliki paruh yang sangat runcing dan tidak memiliki ujung yang meruncing ke bawah
	PAGE 28		
	Red-footed Booby		Angsa-batu Kaki Merah
	Wingspan: 1 m		Bentangan sayap: 1 m
	Common		Umum ditemukan

	All year		Sepanjang tahun
	Adult		Dewasa
	Bright red feet		Kaki berwarna merah terang
	Beware: dark and light morphs. Cape and Australian gannets lack red feet and have black tail feathers		Perhatikan: Jenis dengan warna gelap dan terang. Gannet Cape dan Gannet Australia tidak memiliki kaki berwarna merah terang dan memiliki bulu ekor berwarna hitam
	Juvenile		Remaja
	No clear underwing pattern, feet yellow, brown or reddish		Tidak memiliki pola yang jelas pada sayap bagian dalam, kaki berwarna kuning, cokelat atau kemerahan
	Beware: all other juvenile boobies have clearly defined underwings		Perhatikan: Seluruh remaja Angsa-batu memiliki pola sayap pada bagian dalam yang jelas
	PAGE 29		
	Brown Booby		Angsa-batu Coklat
	Wingspan: 1 m		Bentangan sayap: 1 m
	Common		Umum ditemukan
	All year		Sepanjang tahun
	Brown head, upper parts and throat, extending onto upper breast		Kepala berwarna cokelat, begitu pula dengan tubuh bagian atas dan kerongkongan, membentang hingga dada atas
	Beware: juvenile Masked Booby, which have dark throat only and lacks dark on upper breast.		Perhatikan: Remaja Angsa-batu topeng yang hanya memiliki warna gelap pada kerongkongannya dan tidak memiliki warna gelap pada dada bagian atas
	PAGE 30		
	Masked Booby		Angsa-batu Topeng
	Wingspan: 1.5 m		Bentangan sayap: 1,5 m
	Common		Umum ditemukan
	All year in near shore tropical waters		Sepanjang tahun di daerah pesisir perairan tropis
	Adult		Dewasa
	White body		Badan putih
	Small, black face mask diagnostic		Pola warna hitam yang menyelimuti bagian depan kepala seperti topeng
	Juvenile		Remaja
	Brown does not extend onto upper breast		Warna cokelat tidak membentang hingga bagian dada atas
	White ring around neck		Lingkaran putih diseputar leher

	Adult		Dewasa
	Juvenile		Remaja
	PAGE 31		
	Cape Gannet		Gannet Tanjung
	Wingspan: 1.8 m		Bentangan sayap: 1,8 m
	Common inshore, endemic to South Africa		Umum ditemukan di dekat pantai, jenis endemis Afrika Selatan
	All year		Sepanjang tahun
	Black tail		Ekor hitam
	Golden head with black stripe on throat		Kepala berwarna emas dengan garis hitam di tenggorokan
	Black feet		Kaki hitam
	Beware: Australian Gannet (not illustrated) has white outer tail feathers		Perhatikan: Gannet Australia (tidak diilustrasikan) memiliki pinggiran bulu ekor yang berwarna putih
	Juvenile		Remaja
	Immature		Belum dewasa
	Adult		Hampir dewasa
	Sub-adult		Dewasa
	Golden wash to head		Aksen emas di sekeliling kepala
	PAGE 32		
	Frigatebirds		Burung Cikalang/ Bintayung
	Frigatebirds are unmistakeable, large, dark tropical seabirds known for attacking other seabirds. Deeply forked, scissor-tails.		Burung cikalang/ bintayung merupakan jenis burung tropis yang memiliki tubuh besar dan berwarna gelap, dikenal kerap menyerang burung laut lainnya. Memiliki ekor yang sangat bercabang menyerupai bentuk gunting.
	Males occasionally seen with bright red throat sacs inflated spectacularly.		Pada waktu berbiak, burung jantan memiliki kantung merah terang pada lehernya yang dapat mengembang
	Sexes differ.		Kelamin berbeda
	Male Christmas Figratebird (F. andrewsi, not illustrated) are all-black with white belly patch diagnostic. Females have black head and throat with extensive white breast and belly, and clear finger of white extending onto underwing. Juveniles are similar to females but have brownish head		Burung cikalang/ bintayung christmas jantan (F. Andrewsi, tidak diilustrasikan) memiliki warna hitam di seluruh tubuhnya dengan sedikit corak putih pada perutnya. Burung betina memiliki kepala dan kerongkongan berwarna hitam dengan warna putih yang melebar dari dada hingga perut, serta garis putih yang membentang hingga sayap bagian dalam. Remaja memiliki kemiripan dengan betina namun berwarna kecoklatan pada kepala
	PAGE 33		

	Greater Frigatebird		Cikalang Besar/ Greater Frigatebird
	Wingspan: 2-2.3 m		Bentangan sayap: 2-2,3 m
	Common inshore, but ranges widely in tropical waters		Umum ditemukan di sekitar pantai, namun tersebar luas di perairan tropis
	All year		Sepanjang tahun
	Male		Jantan
	All-black plumage		Keseluruhan berwarna hitam
	Female		Betina
	White on breast/belly never extends onto wings		Warna putih pada dada/perut namun tidak membentang hingga sayap
	Juvenile		Remaja
	Reddish head and throat with white breast, but no white extending to underwing		Kepala dan kerongkongan berwarna kemerahan dan dada berwarna putih, namun warna putih tidak membentang hingga sayap bagian dalam
	Beware: Lesser Frigatebird has white extending onto underwing		Perhatikan: Cikalang kecil memiliki corak warna yang membentang hingga sayap bagian dalam
	Adults		Dewasa
	Male		Jantan
	Female		Betina
	Juvenile		Remaja
	PAGE 34		
	Lesser Frigatebird		Cikalang Kecil/ Lesser Frigatebird
	Wingspan: 2 m		Bentangan sayap: 2 m
	Common inshore, but ranges widely in tropical waters		Umum ditemukan di sekitar pantai, namun biasanya tersebar luas di perairan tropis
	All year		Sepanjang tahun
	Male		Jantan
	Otherwise all dark bird has small white patch joining under wing to body		Sebaliknya, semua burung berwarna gelap memiliki bercak putih yang membentang dari sayap bagian dalam hingga ke tubuhnya
	Female		Betina
	Dark belly with white on upper breast extending onto under wing		Perut berwarna gelap dengan warna putih pada dada bagian atas yang membentang hingga sayap bagian dalam
	Juvenile		Remaja

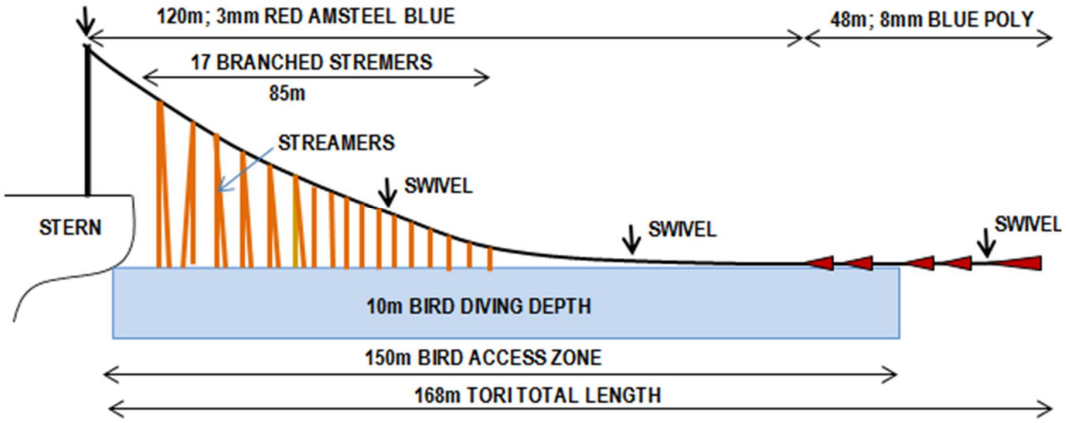
	Reddish head and throat with white breast, with white extending to underwing		Kepala dan kerongkongan berwarna kemerahan dan dada berwarna putih yang membentang hingga sayap bagian dalam
	Beware: female Christmas Frigatebird which has white belly		Perhatikan: Burung Cikalang christmas yang memiliki perut berwarna putih
	Male		Jantan
	Female		Betina
	PAGE 35		
	Other Seabirds		Burung laut lain
	Subantarctic Skua		Skua subantartik
	Wingspan: 1.3 - 1.6 m		Bentangan sayap: 1,3 - 1,6 m
	Frequent		Rutin
	Adult mostly austral winter		Dewasa umumnya pada musim dingin bagian belahan bumi selatan
	Subantarctic distinguished from brown morph of South Polar (S. maccormicki, not illustrated) with great difficulty, but latter has small, circular, white blaze of feathers at base of bill.		Burung Skua subantartik sangat sulit dibedakan dengan Skua kutub selatan (S. Maccormicki, tidak diilustrasikan), namun Skua kutub selatan memiliki bulu putih kecil yang melingkar di pangkal paruhnya
	Pale and intermediate morph South Polar's are rarer, but have paler bodies contrasting strongly with darker wings		Individu Skua kutub selatan dari jenis pucat (*pale*) dan menengah (*intermediate*) lebih jarang ditemukan, namun memiliki warna tubuh yang lebih pucat, sangat kontras dengan warna bulu sayapnya yang lebih gelap
	White window on wing		Corak putih pada sayap
	PAGE 36		
	IF YOU RECOVER A BANDED SEABIRD		JIKA MENEMUKAN BURUNG LAUT YANG MEMILIKI PENANDA
	Petrels and albatrosses of all species caught in the IOTC zone are likely to wear bands, since large numbers have been banded on the breeding grounds. Generally, birds carry a metal leg band with a number and the address/name of the banding scheme to which recovery must be reported. Some birds may also carry a second plastic/coloured band on the other leg. The entire information on the metal band should be recorded. Since this information is unique, the reporter does not need to provide the band itself, the exact information on the band is sufficient to validate the recovery.		Seluruh jenis burung petrel dan albatros yang terdapat di zona IOTC kemungkinan besar memiliki penanda di kaki mereka, disebabkan banyak dari mereka yang telah ditanda ketika berada di lokasi berkembang biak. Umumnya, burung-burung tersebut memiliki penanda metal di kakinya yang berisikan informasi nomor dan alamat/nama skema yang dimana jika ditemukan harus segera dicatat. Beberapa lainnya juga mungkin memiliki penanda kedua dari plastik/berwarna pada kaki yang lainnya. keseluruhan informasi yang terdapat di penanda metal/plastik harus dicatat. Dikarenakan informasi tersebut bersifat unik, maka sang pencatat tidak perlu untuk menyediakan penanda karena informasinya cukup valid untuk memvalidasi penemuan.
	Examples of metal bands:		Contoh untuk penanda metal:
	In case of catch of a banded bird:		Dalam kasus tertangkapnya burung yang memiliki penanda:
	1. Check both legs, especially if a plastic band is detected, a metal band is likely to be found on the other leg:		1. Periksa kedua kaki; terutama jika penanda plastik terlihat, maka kemungkinan besar terdapat penanda metal di kaki lainnya

	if dead (most of the cases), then band(s) can be removed, record the numbers, letters and banding scheme or address, as appearing above		Jika burung telah dalam kondisi mati (dalam hal ini sering terjadi), maka penanda dapat dilepas dari kakinya, catat nomor, huruf dan skema penanda/alamat yang terdapat di penanda tersebut sesuai dengan urutannya.
	if alive (in rare cases the bird is caught during hauling of line), the bird must be held at the back of head AND by the bill (not by the throat), the hook removed, and you must record the entire band information before releasing the bird overboard. Never remove the band.		Jika burung masih dalam kondisi hidup (dalam hal ini jarang terjadi, burung ikut tertangkap ketika jaring ditarik kembali), maka pegang burung tersebut pada bagian belakang kepalanya DAN paruhnya (jangan pada bagian leher), lepaskan kaitnya, dan catat seluruh informasi sebelum burung tersebut dilepaskan kembali. Jangan pernah mencoba untuk melepaskan penanda pada burung yang masih hidup.
	2. Record:		2. Pencatatan:
	Position of recovery (latitude and longitude)		Posisi penemuan (Garis Lintang dan Bujur)
	Date		Tanggal
	Fishing vessel (type and flag)		Nama Kapal Perikanan (tipe dan bendera)
	3. Send the information to the IOTC Secretariat (secretariat@iotc.org) who will forward it to the national banding authorities.		3. Kirimkan informasi yang telah dicatat ke Sekretariat IOTC (secretariat@iotc.org) dimana mereka akan meneruskan informasi tersebut ke Indonesian Bird Banding Scheme (IBBS).
	PAGE 37		
	IOTC REQUIREMENTS REGARDING SEABIRDS		PERSYARATAN IOTC TERKAIT BURUNG LAUT
	(Note: requirements as per IOTC Resolutions 12/03 and 12/06. It is recommended that you check annually for modifications by IOTC)		(Catatan: Persyaratan ini sesuai Resolusi IOTC 12/03 dan 12/06. Direkomendasikan untuk melakukan pemeriksaan setiap tahun untuk mengetahui modifikasinya oleh IOTC)
	Longline and gillnet fishing vessels shall record in their logbook any incidental catch of seabirds.		Kapal perikanan yang menggunakan rawai dan jaring insang harus mencatat dalam *logbook*-nya apabila ada burung laut yang tidak sengaja tertangkap
	Fishing vessels shall report any interaction with seabirds, including details of species		Kapal perikanan harus melaporkan apabila terjadi interaksi dengan burung laut, termasuk detail spesiesnya
	Fishing vessels operating south of 25° South shall use at least two of the following three mitigation measures:		Kapal perikanan yang beroperasi di bagian selatan 25° dari selatan harus melakukan sekurang-kurangnya dua dari tiga tindakan mitigasi berikut:
	night setting with minimum deck lighting (no setting after nautical dawn and before nautical dusk)		Pengaturan malam dengan penerangan dek minimal (tidak ada pengaturan penerangan setelah fajar nautika dan sebelum senja nautika)
	bird-scaring lines or ‘tori lines’ (tori lines shall be deployed during longline setting)		Tali pengusir burung atau 'tali tori' (tali tori harus digunakan ketika setting rawai)
	weighted branch lines (weights must be attached to all branch lines)		Tali cabang pemberat (Pemberat harus terikat ke seluruh tali cabang)
	LINE WEIGHTING SPECIFICATIONS		Spesifikasi Bobot Tali Pemberat
	Weights must be attached to all branch lines as follow:		Bobot harus terikat ke semua tali cabang sesuai berikut:
	at least 45 grams attached within 1 m of the hook, or		Sekurang-kurangnya 45 gram terikat dalam batas 1 m dari kail, atau

	at least 60 grams attached within 3.5 m of the hook, or		Sekurang-kurangnya 60 gram terikat dalam batas 3,5 m dari kail, atau
	at least 98 grams attached within 4 m of the hook		Sekurang-kurangnya 98 gram terikat dalam batas 4 m dari kail
	PAGE 37		
	DESIGN OF BIRD SCARING LINES (TORI LINES)		DESAIN TALI PENGUSIR BURUNG (TALI TORI)
	1. An appropriate towed device on the section of the tori line in the water can improve the aerial extension.		1. Alat tarik yang layak pada bagian tali tori di air dapat meningkatkan ekstensi aerial
	2. The above water section of the line shall be sufficiently light that its movement is unpredictable to avoid habituation by birds and sufficiently heavy to avoid deflection of the line by wind.		2. Tali di bagian atas air harus cukup ringan untuk menghindari habituasi dari burung namun harus cukup berat untuk menghindari defleksi yang umumnya disebabkan oleh angin.
	3. The line is best attached to the vessel with a robust barrel swivel to reduce tangling of the line.		3. Tali yang terikat ke kapal sebaiknya terikat dengan baik menggunakan *barrel swivel* yang kuat untuk mengurangi kemungkinan tali kusut
	4. The streamers should be made of material that is conspicuous and produces an unpredictable lively action(e.g. strong fine line sheathed in red polyurethane tubing) suspended from a robust three-way swivel (that again reduces tangles) attached to the line.		4. S*treamer* sebaiknya terbuat dari material yang mencolok dan menghasilkan pergerakan yang lincah (contohnya adalah tali halus kuat bersarungkan tabung polyurethane merah) yang digantungkan dari *swivel* bercabang tiga yang kuat (untuk menghindari kusut) yang terikat ke tali.
	5. Each streamer should consist of two or more strands.		5. Setiap *streamer* sebaiknya terdiri dari dua helai atau lebih
	6. Each streamer pair should be detachable by means of a clip so that line stowage is more efficient.		6. Setiap pasang *streamer* sebaiknya mudah untuk diputus oleh *clip* agar penyimpanan jaring menjadi lebih efisien.
	Towing Point		Titik tarik
	Aerial extent		*Aerial extent*
	Streamers		*Streamer*
	Hookline		Kait
	Towed Object at the end of the streamer line creating tension		Obyek yang ditarik pada tali *streamer* yang menyebabkan tegangan
	PAGE 38		
	DEPLOYMENT OF BIRD SCARING LINES (TORI LINES)		PEMASANGAN TALI PENGUSIR BURUNG (TALI TORI)
	1. The line should be suspended from a pole affixed to the vessel. The tori pole should be set as high as possible so that the line protects bait a good distance astern of the vessel and will not tangle with fishing gear. Greater pole height provides greater bait protection. For example, a height of around 7m above the water line can give about 100m of bait protection.		1. Tali sebaiknya digantungkan pada tiang yang terdapat pada bagian kapal. Tiang tori sebaiknya dipasang setinggi mungkin agar dapat melindungi umpan pada rawai dan tidak terlilit pada alat tangkap. Tiang yang lebih tinggi cenderung lebih baik dalam hal proteksi umpan. Contohnya, tiang setinggi 7 m dari permukaan air dapat memberikan radius proteksi umpan sekitar 100 m.

	2. If vessels use only one tori line it should be set to windward of sinking baits. If baited hooks are set outboard of the wake, the streamer line attachment point to the vessel should be positioned several meters outboard of the side of the vessel that baits are deployed. If vessels use two tori lines, baited hooks should be deployed within the area bounded by the two tori lines.		2. Jika kapal hanya menggunakan satu tali tori, maka sebaiknya dipasang sesuai dengan arah angin dari umpan yang dipasang. Jika umpan pada kait dipasang di luar *wake*, maka titik pengikat tali *streamer* harus diposisikan beberapa meter diluar sisi kapal dimana umpan telah dipasang. Jika kapal menggunakan dua tali tori, maka umpan pada kait sebaiknya dipasang di dalam radius area diantara dua tali tori tersebut.
	3. Deployment of multiple tori lines is encouraged to provide even greater protection of baits from birds.		3. Pemasangan beberapa tali tori sangat dianjurkan untuk proteksi umpan yang lebih baik
	4. Because there is the potential for line breakage and tangling, spare tori lines should be carried onboard to replace damaged lines and to ensure fishing operations can continue uninterrupted. Breakaways can be incorporated into the tori line to minimize safety and operational problems should a longline float foul or tangle with the in-water extent of a streamer line.		4. Karena ada kemungkinan bagi tali untuk putus ataupun terlilit, tali tori cadangan sebaiknya disediakan sebelumnya untuk mengganti tali yang rusak dan untuk memastikan kegiatan penangkapan ikan dapat berjalan sedemikian rupa. Pemutusan paksa dapat dilakukan untuk meminimalisasi keamanan dan masalah operasional jika pelampung rawai membentur atau terlilit dengan tali *streamer*
	5. When fishers use a bait casting machine (BCM), they must ensure coordination of tori line and machine by i) ensuring the BCM throws directly under the tori line protection, and ii) when using a BCM (or multiple BCMs) that allows throwing to both port and starboard, two tori lines should be used.		5. Ketika nelayan menggunakan mesin pelempar umpan otomatis (BCM), mereka harus memastikan letak koordinasi dari tali tori dan mesin dengan cara i) memastikan BCM melempar umpan di area yang terlindung oleh tali tori, dan ii) ketika menggunakan BCM (atau beberapa BCM) yang melempar umpan ke dua arah, dua tali tori harus digunakan
	6. When casting branchline by hand, fishers should ensure that baited hooks and coiled branchline sections are cast under the tori line protection, avoiding the propeller turbulence which may slow the sink rate.		6. Ketika melempar tali cabang menggunakan tangan, para nelayan harus memastikan bahwa kait yang berumpan dan bagian tali cabang yang tergulung terdapat di area yang dibatasi proteksi tali tori untuk menghindari turbulen dari baling-baling yang dapat memperlambat tenggelamnya umpan.
	7. Fishers are encouraged to install manual, electric or hydraulic winches to improve ease of deployment and retrieval of tori lines.		7. Para nelayan dihimbau untuk memasang kerekan manual, elektrik ataupun hidrolik guna meningkatkan efisiensi pemasangan dan penarikan tali tori.

Annex 2. Design and contruction of tori line that commonly adapted and used by tuna longliner fishers.



Streamers are 6.4 mm Kraton orange tubing and extend to the water with streamers spaced at 5 m intervals starting at the stern. Funnels are 17 cm kitchen funnels designed to create drag and create water disturbance to deter birds. A road cone minus its base is attached to the end to create drag and aerial extent. Aerial extent is 150 m. The distance astern that baited hooks sink to 10 m – out of the range of most diving seabirds – was assumed to be 150 m.

Annex 3. Scientific observer form

MONITORING HASIL TANGKAPAN

FORM LL 4

Hal:

NO. SETTING

Tangal dan Waktu Mulai Setting

dd	mm	yy	hh	mm

TRIP ID

Tanggal Mulai Haul

dd	mm	yy

DETAIL HASIL TANGKAPAN

Waktu Kapal	Posisi Pancing	Kode Spesies	Kode Kondisi Ikan		Panjang		Cara Pengukuran	Processing	SEX	Catatan
			Tertangkap	Dilepas	(cm)	Kode			M-F-I	
Nomor Catenary dari :					Terhitung:				Total:	

Loka Penelitian Perikanan Tuna

Annex 4. DGCF observer form

Lembar 6. Spesies Terkait secara Ekologi (ERS) yang Tertangkap - Kelompok API 1 dan 2

Nama Pemantau[1]	Nomor ID Pemantau[2]	Nama Kapal & Nomor SIPI[3]	*Trip* / *Setting*[4] ..... /	Halaman[5] .....dari..... Halaman

Tanggal[6]	Waktu (pukul)[7]	Lintang (dd-mm-ss)[8]	Bujur (dd-mm-ss)[9]

IDENTIFIKASI SPESIES

KHUSUS PENYU

Jumlah Sisik[10]			Ukuran Panjang (cm)[11]		
Punggung (Lateral Scutes)[a]	Perut (Inframarginal Scutes)[b]	Kepala (Prefrontal Scales)[c]	CCL (cm)[a]	TTL (cm)[b]	PTL (cm)[c]

SPESIES LAIN

*Kode Spesies[12]	Jantan/Betina[13]	Foto[14]		Panjang (cm) Khusus untuk Hiu, Paus dan Lumba-lumba[15]
		Y / T [*] [a]	Nomor[b]	

Jenis Pancing (Circle / J) [*] [16]	Kode Posisi Pancing (Lingkari)[17]	Deskripsi Spesies[18]
	a Terkait di dalam Alat Pencernaan **b** Terkait di dalam mulut **c** Terkait di luar bagian tubuh **d** Terjerat/terlilit senar pancing	

KONDISI

	Kode Kondisi[a]	Deskripsi Kondisi[b]
Pada Saat Tertangkap:[19]		
Pada Saat Dilepas:[20]	Kode Kondisi[a]	Deskripsi Kondisi[b]

KETERANGAN KODE KONDISI

H	: HIDUP / SEHAT	**H5**	: TERLUKA DAN TERKENA PANCING DIBAGIAN DALAM TUBUH
H1	: HIDUP TAPI SEPERTI TIDAK HIDUP (PINGSAN)	**M**	: MATI
H2	: HIDUP DAN SEHAT TAPI TERJERAT ALAT TANGKAP	**M1**	: MATI DAN TERKENA PANCING DIBAGIAN LUAR TUBUH
H3	: TERLUKA DAN TERJERAT ALAT TANGKAP	**M2**	: MATI DAN TERKENA PANCING DIBAGIAN DALAM TUBUH
H4	: TERLUKA DAN TERKENA PANCING DIBAGIAN LUAR TUBUH	**M3**	: MATI DAN TERJERAT ALAT TANGKAP

Penanganan di atas kapal[21]

TAG / TANDA[22]

Nomor Tanda[a]	Tipe[b]	Organisasi[c]	Keterangan[d]

***KODE SPESIES**

P	: SEMUA PAUS	**Brg**	: SEMUA BURUNG LAUT	**PT**	: PENYU TEMPAYAN	**PL**	: PENYU LEKANG
LL	: SEMUA LUMBA-LUMBA			**PB**	: PENYU BELIMBING	**PS**	: PENYU SISIK
C	: SEMUA CUCUT/HIU			**PH**	: PENYU HIJAU	**PP**	: PENYU PIPIH
Pr	: SEMUA PARI						

Ministry of Marine Affairs and Fisheries
Republic of Indonesia