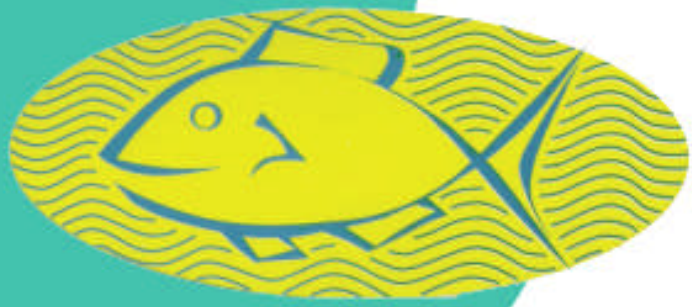
p-ISSN: 0853 - 8980
e-ISSN: 2502 - 6569

INDONESIAN FISHERIES RESEARCH JOURNAL



CENTER FOR FISHERIES RESEARCH
AGENCY FOR MARINE AFFAIRS AND FISHERIES RESEARCH AND HUMAN RESOURCES
MINISTRY OF MARINE AFFAIRS AND FISHERIES

Ind.Fish Res.J.	Vol. 25	No. 1	Page 1-63	June-2019	p-ISSN 0853-8980	e-ISSN 2502-6569

p-ISSN 0853–8980
e-ISSN 2502–6569

INDONESIAN FISHERIES RESEARCH JOURNAL

Available online at: http://ejournal-balitbang.kkp.go.id/index.php/ifrj
e-mail:ifrj.puslitbangkan@gmail.com
p-ISSN: 0853-8980
e-ISSN: 2502-6569
Accreditation Number RISTEKDIKTI: 21/E/KPT/2018

Volume 25 Number 1 June 2019
Accreditation Number of the Ministry of Research Technology and Higher Education: 21/E/KPT/2018
Rangking Two (2) of Accreditation is valid for 5 (five) years
(Volume 22 Number 1 Year 2016-Volume 26 Number 2 Year 2020)

Indonesian Fisheries Research Journal is the English version of fisheries research journal.
The first edition was published in 1994 with once a year. Since 2005, this journal
has been published twice a year on JUNE and DECEMBER.

Editor in Chief:
Ir. Duto Nugroho, M.Si. (Resources and Environment-Research Center for Fisheries)

Editorial Board:
Prof. Dr. Ir. Ngurah N. Wiadnyana, DEA. (Fisheries Ecology-Research Center for Fisheries)
Prof. Dr. Ir. Mennofatria Boer, DEA. (Applied Mathematics and Statistics-Bogor Agricultural Institute)
Prof. Dr. Ir. Gadis Sri Haryani. (Limnology-Limnology Reseach Center)
Prof. Dr. Ir. Husnah, M. Phil. (Toxicology-Research Center for Fisheries)
Prof. Dr. Ir. Ari Purbayanto. (Fishing Technology-Bogor Agricultural Institute)

Language Editor:
Rita Rachmawati, S.Pi, M.Si. (Research Center for Fisheries)

Assistant Editor:
Dra. Endang Sriyati
Darwanto, S.Sos.
Amalia Setiasari, A.Md

Editorial Office:
Arief Gunawan, S.Kom.

Published by:
Research Center for Fisheries

Manuscript send to the publisher:
Indonesian Fisheries Research Journal
Research Center for Fisheries
Jl. Pasir Putih II Ancol Timur, Jakarta Utara-14430, Indonesia
Phone: (021) 64700928, Fax: (021) 64700929
Website : http://ejournal-balitbang.kkp.go.id/index.php/ifrj/
Email: ifrj.puslitbangkan@gmail.com.

Indonesian Fisheries Research Journal is printed by Research Center for Fisheries Budgeting F.Y. 2019.

INDONESIAN FISHERIES RESEARCH JOURNAL

SHEET INDEXING

FOCUS AND SCOPE OF INDONESIAN FISHERIES RESEARCH JOURNAL

Indonesian Fisheries Research Journal (http://ejournal-balitbang.kkp.go.id/index.php/ifrj) has p-ISSN 0853-8980; e-ISSN 2502-6569 with Accreditation Number of the Ministry of Research Technology and Higher Education: 21/E/KPT/2018 Rangking Two (2) of Accreditation is valid for 5 (five) years (Volume 22 Number 1 Year 2016-Volume 26 Number 2 Year 2020). The first edition was published in 1994 with once a year in 1994. Since 2005, this journal has been published twice a year on June and December.

Indonesian Fisheries Research Journal publishes research results on resources, oceanography and limnology for fisheries, fisheries biology, management, socio-economic and enhancement, resource utilization, aquaculture, post harvest, of marine, coastal and inland waters.

Manuscript submitted entering to Indonesian Fisheries Research Journal will be checked on the guidelines writing by Editorial Office. If it is in compliance will be reviewed by one (1) person Editorial Board and one (1) person peer-reviewer based on the appointment of Editor in Chief. The decision whether or not a manuscript accepted the rights of Editor in Chief based on the recommendations of Editorial Board and peer-reviewer.

INDEXING INFORMATION OF INDONESIAN FISHERIES RESEARCH JOURNAL

Indonesian Fisheries Research Journal (http://ejournal-balitbang.kkp.go.id/index.php/ifrj) has p-ISSN 0853-8980; e-ISSN 2502-6569 that have been indexed in some indexers repute, among others: World Cat, Cross Ref, Indonesian Scientific Journal Database (ISJD), SCILIT, Sherpa/Romeo, Google Scholar, Directory Open Access Journals (DOAJ), Bielefeld Academic Search Engine (BASE), Library British, Lancaster University, Science and Technology Index (SINTA), Mendeley, Garuda and Dimensions.

PEER-REVIEWERS OF INDONESIAN FISHERIES RESEARCH JOURNAL

1. Prof. Dr. Ir. Wudianto, M.Sc. (Fishing Technology-Research Center for Fisheries), Indonesia
2. Dr. Purwito Martosubroto (The National Commission on Fish Stock Assessment), Indonesia
3. Dr. Imam Musthofa Zainudin (Marine Biologist-World Wide Fund for Nature, WWF), Indonesia
4. Prof. Dr. Ir. Cecep Kusmana, M.S. (Ecology and mangrove silviculture-Bogor Agricultural Intitute), Indonesia
5. Dr. Tonny Wagey (Fisheries Oceanography-The University of British Columbia), Canada
6. Dr. Régis Hocdé (Mathematics-Institute of Research for Development), France
7. Dr. Laurent Pouyaud (Marine Biologist-Institute of Research for Development), France
8. Dr. Campbell Davies, Australia
9. Prof. Colin Simpfendorfer (Fisheries-Biologist-Centre for Sustainable Tropical Fisheries and Aquaculture & James Cook University), Australia
10. Dr. Shinsuke Morioka, Japan
11. Prof. Neil Loneragan (Fisheries Biologist-Murdoch University), Australia
12. Dr. Ario Damar, M.Si. (Fisheries Ecology-Bogor Agricultural Institute), Indonesia
13. Prof. Dr. Ir. Setyo Budi Susilo, M.Sc. (Bogor Agricultural Institute), Indonesia
14. Prof. Dr. Ir. Sonny Koeshendrajana, M. Sc. (Resources Economics-Research Centre for Marine and Fisheries Socio-Economics), Indonesia
15. Prof. Dr. Sam Wouthuyzen (Oceanography LIPI), Indonesia
16. Prof. Dr. Ir. Endi Setiadi Kartamihardja, M.Sc. (Institute for Fisheries Enhancement and Conservation), Indonesia
17. Prof. Dr. Ir. Janny Dirk Kusen, MSc, (Marine Biology - Universitas Sam Ratulangi), Indonesia
18. Dr. Ir. Augy Syahailatua (Research Center for Oceanography-The Indonesian Institute of Sciences), Indonesia
19. Ali Reza Radkhah, M.Sc. (Aquaculture and Fisheries Biotechnology, Departement of Fisheries, University of Tehran, Iran)
20. Prof. Dr. Ketut Sugama (Aquaculture, Center for Fisheries Research), Indonesia
21 Dr. Sudarto (Research Center and Development Aquaculture), Indonesia
22. Dr. Priyanto Rahardjo, M.Sc. (Estimation of stock-Fisheries High School), Indonesia
23. Dr. Estu Nugroho (Research Center for Fisheries), Indonesia
24. Dr. Ir. Rudhy Gustiano, M.Sc. (Genetic Fisheries-Institute for Freshwater Research and Development), Indonesia
25. Ir. Badrudin, M.Sc. (Demersal Fisheries Biology-Marine Research Institute), Indonesia
26. Dr. Ir. Mochammad Riyanto, M.Si. (Fishing Technology-Bogor Agricultural Institute), Indonesia
27. Dr. Ir. Abdul Ghofar, M. Sc. (Fish Stock Assessment Resource-Diponegoro University), Indonesia
28. Dr. Ir. Lukman, M.Si. (Limnology LIPI), Indonesia

29. Dra. Tuty Arisuryanti, M.Sc, (Genetic Gadjah Mada University), Indonesia
30. Dr. Ir. Dewa Gede Raka Wiadnya, M.Sc. (Environment and Fish Resources- Brawijaya University), Indonesia
31. Dr. Wijopriono (Hydro Acoustic Fisheries-Research Center for Fisheries), Indonesia
32. Dr. Anang Hari Kristanto (Aquaculture, Institute for Freshwater Aquaculture Research and Fisheries Extension), Indonesia
33. Dr. Arif Wibowo (Molecular Ecology-Public Water Fisheries Research Institute), Indonesia
34. Dr. Ir. Zairion, M. Sc. (Management of Fisheries Resources-Bogor Agricultural Institute)

ACKNOWLEDGEMENTS FOR PEER-REVIEWERS

Editor of Indonesian Fisheries Research Journal (IFRJ) would like to thank for Peer-Reviewers who have participated in the review paper published in the scientific journal's, so that this journal can be published in a timely manner. Peer-Reviewers who participated in the publication Volume 25 Number 1 June 2019 are:

1. Prof. Dr. Ir. Endi Setiadi Kartamihardja, M.Sc. (Institute for Fisheries Enhancement and Conservation), Indonesia
2. Prof. Dr. Ir. Wudianto, M.Sc. (Fishing Technology-Research Center for Fisheries), Indonesia
3. Prof. Dr. Ir. Mennofatria Boer, DEA. (Applied Mathematics and Statistics-Bogor Agricultural Institute)
4. Dr. Ir. Zairion, M. Sc. (Management of Fisheries Resources-Bogor Agricultural Institute)
5. Dr. Arif Wibowo (Molecular Ecology-Public Water Fisheries Research Institute), Indonesia
6. Dr. Anang Hari Kristanto (Aquaculture, Institute for Freshwater Aquaculture Research and Fisheries Extension, Indonesia)
7. Dr. Wijopriono (Hydro Acoustic Fisheries-Research Center for Fisheries), Indonesia
8. Ali Reza Radkhah, M.Sc. (Aquaculture and Fisheries Biotechnology, Departement of Fisheries, University of Tehran, Iran)

PREFACE

Indonesian Fisheries Research Journal (IFRJ) in 2019 entered the Volume 25. The process of publishing this journal is funded by Research Center for Fisheries of the fiscal year 2019. All submissions should be published through the process of evaluation by the Editorial Board, Peer-Reviewers and editing by Editorial Office.

The IFRJ Volume 25 Number 1 2019 presented seven fisheries research articles: Population Dynamic and Spawning Potential Ratio of Short Mackerel (*Rastrelliger brachysoma* Bleeker, 1851) in The Northern Coast of Java; Potentials Yield and Fisheries of Malahayu Reservoir, Brebes; Population Parameters of Endeavour Shrimp (*Metapenaeus ensis* de Haan) in Binuangeun and Adjacent Waters, West Java; Preliminary Study On Biological Aspects of Papuan Seerfish (*Scomberomorus multiradiatus* Munro, 1964) in Merauke Waters, Papua, Indonesia; Genetic Chracterization of Kissing Gourami (*Helostoma temminckii* Cuvier, 1829) in Ogan River, South Sumatra Inferred From *16S rRNA* and *COI* Mitochondrial Genes; Characteristic of Small Scale Tuna Fisheries Associated With FADs in Labuhan Lombok, Nusa Tenggara-Indonesia; New Record of Giant Devil Ray (Chondrichthyes: Myliobatidae) From Oran Bay (Western Mediterranean Sea).

Those scientific papers are expected to contribute to policy makers and managers of fisheries resources in Indonesia. Editor would deliver sincere thanks to reseachers from the Resarch Center for Fisheries and outside for their active participation in this edition.

Editor in Chief

p-ISSN 0853–8980
e-ISSN 2502–6569

INDONESIAN FISHERIES RESEARCH JOURNAL
Volume 25 Number 1 June 2019

CONTENS

Page

PEER-REVIEWER……..... i

ACKNOWLEDGEMENTS..……..... ii

PREFACE ……..... iii

CONTENTS …….. iv

ABSTRACT..... v-vii

Population Dynamic and Spawning Potential Ratio of Short Mackerel (*Rastrelliger brachysoma* Bleeker, 1851) in The Northern Coast of Java
By: Achmad Zamroni and Tri Ernawati..... 1-10

Potentials Yield and Fisheries of Malahayu Reservoir, Brebes
By: Setya Triharyuni, Aisyah, Chairulwan Umar and Husnah..... 11-17

Population Parameters of Endeavour Shrimp (*Metapenaeus ensis* de Haan) in Binuangeun and Adjacent Waters, West Java
By: Ali Suman, Prihatiningsih, Pratiwi Lestari and Andina Ramadhani Putri Pane..... 19-26

Preliminary Study On Biological Aspects of Papuan Seerfish (*Scomberomorus multiradiatus* Munro, 1964) in Merauke Waters, Papua, Indonesia
By: Duranta Diandria Kembaren, Adi Surahman and Tegoeh Noegroho..... 27-35

Genetic Chracterization of Kissing Gourami (*Helostoma temminckii* Cuvier, 1829) in Ogan River, South Sumatra Inferred From *16S rRNA* and *COI* Mitochondrial Genes
By: Tuty Arisuryanti, Gregorius Altius Pratama, Lukman Hakim, Johan Putra Koentjana and Fitria Kurnia Nazira..... 37-44

Characteristic of Small Scale Tuna Fisheries Associated With FADs in Labuhan Lombok, Nusa Tenggara-Indonesia
By: Fathur Rochman, Irwan Jatmiko and Zulkarnaen Fahmi..... 45-54

New Record of Giant Devil Ray (Chondrichthyes: Myliobatidae) From Oran Bay (Western Mediterranean Sea)
By: Kais Boumediene Hussein and Lotfi Bensahla-Talet..... 55-63

CERTIFICATE..... App. 64

AUTHOR GUIDELINES..... App. 65

INDONESIAN FISHERIES RESEARCH JOURNAL
Volume 25 Number 1 June 2019

ABSTRACT

POPULATION DYNAMIC AND SPAWNING POTENTIAL RATIO OF SHORT MACKEREL (*Rastrelliger brachysoma* Bleeker, 1851) IN THE NORTHERN COAST OF JAVA

Achmad Zamroni
IFRJ, Vol. 25 No. 1, Page: 1-10

ABSTRACT

Short mackerel fish (*Rastrelliger brachysoma*) is one of small pelagic fish mostly exploited by mini purse seine fishing gear. Exploitation of short mackerel by mini purse seine has an increasing trend every year and suspected to have negative impacts. One of the negative impact is the decrease of fish abundance, so it is necessary to carry out population dynamics and Spawning Potential Ratio (SPR) studies through length-based approach to provide exploitation indicator as biology reference point. The result of length-weight relationship analysis shows that the growth pattern (*b* = 2.3483) is negative allometry. The estimated length at first capture and its first sexual maturity analysis shows that the value of length at first capture (Lc = 15.4 cm FL) is greater than the length at first sexual maturity (Lm = 15.21 cm FL). The estimated maximum length (L_∞) is 21.05 cm FL with growth rates (*K*) is 1.01 year-1 and t0 at -0.177 years. The estimated total mortality (Z) was 5.48 year-1, natural mortality (*M*) was 2.02 year-1 and fishing mortality (*F*) was 3.46 year-1. The predicted exploitation rate (*E*) is 0.63 which higher than the optimum value (*E* = 0.5). The estimated length-based SPR (LB-SPR) of 30% (SPR > 20% or above limit) means that short mackerel fishing activity has full exploitation.

Keywords: Growth parameter; northern Java; short mackerel; spawning potential ratio

POTENTIALS YIELD AND FISHERIES OF MALAHAYU RESERVOIR, BREBES

Setiya Triharyuni
IFRJ, Vol. 25 No. 1, Page: 11-17

ABSTRACT

Fishing activity in Malahayu Reservoir has been done since long time. Unlimited fishing may impact to the decresing of fish resources of those waters. This study presents an assessment of fishing practices in Malahayu reservoir between 2008-2016 periods. Data of potential fish production and catch per unit effort were estimated by using different estimate models, catch per unit effort was analyzed annually, while potential fish production was analyzed by using five models namely model by Henderson & Welcome (1974), Teows & Griffith (1979), Marshal (1984), Moreau & De Silva (1991) and Crul (1992). The results show that changes of fish composition has accured, which was originally dominated by native fish while for now it is dominated by 72,05% of tilapia (*Oreochromis niloticus*) as an introduced fish. Furthermore, the average catch per unit effort (CPUE) in Malahayu reservoir is about 11,82 kg / fisherman, while the average potential production is about 198,55 kg / year. CPUE value and potential production indicate that exploitation rate in Malahayu Reservoir are in fully-exploited or perhaps over-exploited condition. Related to those conditions, not to increase the number of efforts (fishermen) as a management option towards sustainable fisheries.

Keywords: CPUE; yield; Malahayu reservoir; exploitation rate

POPULATION PARAMETERS OF ENDEAVOUR SHRIMP (*Metapenaeus ensis* de Haan) IN BINUANGEUN AND ADJACENT WATERS, WEST JAVA

Ali Suman
IFRJ, Vol. 25 No. 1, Page: 19-26

ABSTRACT

Study on the population dynamic of endeavour shrimp (*Metapenaus ensis*) was conducted in Binuangeun waters based on data collected during period of survey, January to November 2016. The purpose of the study was to identify population parameters of the endeavour shrimp. Result showed that the endeavor shrimp growth pattern in Binuangeun waters was negative allometric and sex ratio of males and females was 1.0 : 2.7. The chi square test indicated that comparison of male and female of the endeavour shrimp was significantly different. It mean that there was imbalance in number between males and females. The length at first capture (L_c) of endeavour shrimp was 28.9 mm (carapace length), smaller than the length at first maturity (L_m) at 37.7 mm (carapace length). The growth parameter of endeavour shrimp was 1.33/year with maximum carapace length (Loo) of 51.45 mm. Instantenous total mortality (Z) and natural mortality (M) were 7.74/year and 1.88/year, respectively. While fishing mortality (F) and exploitation rate (E) respectively were 5.86/year and 0.76/year. The exploitation rate of endeavour shrimp in Binuangeun and adjacent waters was high. It was, therefore, recommended that fishing effort of the endeavour shrimp in that waters should be reduced about 52 % in the next year.

Keywords: Population dynamic; endeavour shrimp; Binuangeun waters; FMA 573

PRELIMINARY STUDY ON BIOLOGICAL ASPECTS OF PAPUAN SEERFISH (*Scomberomorus multiradiatus* MUNRO, 1964) IN MERAUKE WATERS, PAPUA, INDONESIA

Duranta Diandria Kembaren
IFRJ, Vol. 25 No. 1, Page: 27-35

ABSTRACT

Papuan seerfish (*Scomberomorus multiradiatus*; local: tenggiri papua) is an endemic species to the Papuan waters and distributed from the waters of Papua New Guinea to Merauke in Indonesia. The biological information of this species is little known. This study aimed to determine the biological aspects of Papuan seerfish to fill the research gap of this species. The data collection were conducted from February to November 2016. Biological parameters observation of the fish sample included of fork length (FL), sex, and maturity stages. All the data were analyzed using standard methods. The maximum length and weight of Papuan seerfish from Merauke waters were 49 cm and 908 g and this size became the largest published size ever. The sex ratio was in an equal condition and the growth pattern was isometric. Spawning occurs all year arounds and reach its peak on August. The relative condition factor of Papuan seerfish tend to be low in the reproductive periods. Papuan seerfish from Merauke waters were caught before reaching their size at maturity (Lc < Lm). For the sustainability of this resources and precautionary approach of fisheries management, it is suggested to apply the minimum catch size in 33 cm.

Keywords: Biological; condition factor; size; maturity; Papuan seerfish

GENETIC CHARACTERIZATION OF KISSING GOURAMI (*Helostoma temminckii* Cuvier, 1829) IN OGAN RIVER, SOUTH SUMATRA INFERRED FROM *16S rRNA* AND *COI* MITOCHONDRIAL GENES

Tuty Arisuryanti
IFRJ, Vol. 25 No. 1, Page: 37-44

ABSTRACT

Genetic characterization data of kissing gourami are important to understand historical lineage thus enhancing sustainability of the species and to establish regulation for sustainable management of the fish stock in their habitat. However, investigation of genetic characterization of kissing gourami, one of native Indonesian freshwater fishes has poorly understood. Therefore, the aim of this study was to examine genetic characterization of the fish species collected from Ogan River, South Sumatra using partial sequences of two mitochondrial genes, *16S rRNA* and *COI*. The results revealed that for the 621 bp determined in *16S rRNA* gene of the samples, five sites were variable, of which one was parsimony informative. Concatenate data revealed three haplotypes with an overall haplotype diversity of 0.833±0.222 and nucleotide diversity of 0.003±0.001. The genetic divergence varied from 0-0.49%. Next, sequence analysis of *COI* gene exhibited 609 bp which can be translated into 203 amino acids. For the 609 bp sequence determined in the fish samples, three haplotypes were revealed with nine variable sites and two parsimony informatives. Haplotype diversity and nucleotide diversity of the fish samples were 0.833±0.22 and 0.00794±0.0025, respectively. The haplotype divergence between the fish samples was also supported by three nonsynonymous codons. In addition, the genetic divergence varied from 0 % to 1.16 %. The results suggest that genetic variation of the kissing gourami has to be monitored and further studies are needed to compare the same species from different location to know the historical lineage and demography.

Keywords: Genetic variation; kissing gourami; mt-DNA; Ogan River

CHARACTERISTIC OF SMALL SCALE TUNA FISHERIES ASSOCIATED WITH FADs IN LABUHAN LOMBOK, WEST NUSA TENGGARA-INDONESIA

Fathur Rochman
IFRJ, Vol. 25 No. 1, Page: 45-54

ABSTRACT

Fish aggregating devices, or FADs are used extensively in developing countries to attract and to collect pelagic fish and give positive impacts on fish production. Use of FADs has started in early 20th century with different names among the countries and regions. This study investigated the design, deployment, distribution, density and the number of FADs used by small scale tuna fisherman in Labuhan Lombok, including characteristics of fishing boat, fishing gear, catch composition, catch per unit of effort (CPUE), fish diversity and species richness. There were 65 FADs identified in this study and 47 of them were in normal distribution. Type of the FADs used was anchored FADs, spreading between 56.63 to 267.70 NM from Labuhan Lombok fishing port. The placement of FADs were arranged in such a way as to resemble a fence, in which the distance from one to another was close. It is expected to disrupt tuna movement towards the strait in the small islands around West Nusa Tenggara. The dimensional size of vessels used to catch fish was small boat (< 7 GT) with handline as fishing gears. Fish catches were dominated by skipjack (40.30%) followed by yellowfin tuna (30.90%), tuna juvenile (13.44%), frigate tuna (4.19%), albacore (3.41%), bigeye tuna (2.71%) and others (5.03%). The highest nominal CPUE occurred in January and February, accounted for 278 kg and 285 kg per day at sea respectively. The average diversity of fish and species richness in FADs area were 1.07674 and 1.3573 correspondingly. Overall results inform that diversity of fish, productivity and ecosystem were at sufficient condition and mid ecological pressure but species

richness was in low condition. If this continues, it is possible that tuna diversity will decrease and endanger the survival of tuna species and others species related to the tuna.

Keywords: FADs; tuna fisheries; Indian Ocean; Labuhan Lombok; West Nusa Tenggara

NEW RECORD OF GIANT DEVIL RAY (CHONDRICHTHYES: MYLIOBATIDAE) FROM ORAN BAY (WESTERN MEDITERRANEAN SEA)

Kais Boumediene Hussein
IFRJ, Vol. 25 No. 1, Page: 45-54

ABSTRACT

The present paper reports a new record of Giant devil ray *Mobula mobular* (Bonnaterre, 1788) from western Algerian waters that is encountered for the first time in that coast since its first description in 1901 and last observation in late 80's. This elasmobranch is categorized as endangered on the IUCN Red List (Endangered A2d ver 3.1) and is likely to be the rarest of the nine species of *Mobula* genus. Occasionally it is captured in Mediterranean Sea by purse seines, bottom and pelagic trawls, pelagic nets, bottom longlines, drifters and harpoons. The specimen stranded in "la Madrague Beach" in Western Algerian coasts. Its disc length was measuring 108.96 cm and disc width was 226.02 cm. This Myliobatidae is rarely seen with daily landed fish at Oran fishery. Up to date no explicit reason can be given for the strand of *M. mobular* but ghost fishing and important maritime traffic stay the most plausible cause of this incident.

Keywords: Myliobatidae; Morphometric measurements; Western Mediterranean; Oran Bay; Algeria