

REPORT OF ICCAT CAPACITY BUILDING WORKSHOPS FOR MANAGEMENT STRATEGY EVALUATION IN TROPICAL TUNA FISHERIES

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SUMMARY

Two one day online Management Strategy Evaluation workshops were conducted in 2023, one primarily for scientists on June 13, and one for fishery managers on October 13. Three instructors provided the training in three official ICCAT languages, English, French and Spanish, with the support of simultaneous translation. All documents and course materials were provided through Google Classrooms and mostly included published documents from ICCAT and Harveststrategies.org. Google Classroom prove to be an efficient way of supporting ICCAT training. A pre-workshop questionnaire of the participants provided a view of the expectations for the workshop. These expectations matched those assumed by the instructors in designing the workshop. A post-workshop questionnaire attempted to evaluate workshop success. Information from the post-workshop survey is of limited use as the number of responses to this survey was much lower than the pre-workshop survey. The report contains recommendations to improve future workshop delivery, content, and evaluation.

RÉSUMÉ

Deux ateliers en ligne d'une journée sur l'évaluation de la stratégie de gestion (MSE) ont été organisés en 2023, l'un principalement destiné aux scientifiques, le 13 juin, et l'autre aux gestionnaires des pêcheries, le 13 octobre. Trois instructeurs ont dispensé la formation dans les trois langues officielles de l'ICCAT, à savoir l'anglais, le français et l'espagnol, avec l'appui d'une interprétation simultanée. Tous les documents et le matériel de cours ont été fournis par le biais de Google Classrooms et comprenaient principalement des documents publiés par l'ICCAT et Harveststrategies.org. Google Classroom s'est avéré être un moyen efficace de soutenir la formation de l'ICCAT. Un questionnaire adressé aux participants avant la tenue de l'atelier a permis d'obtenir une vue d'ensemble des attentes relatives à l'atelier. Ces attentes correspondaient à celles des instructeurs lors de la conception de l'atelier. Un questionnaire post-atelier visait à évaluer le succès de l'atelier. Les informations tirées de l'enquête post-atelier sont d'une utilité limitée, car le nombre de réponses à ce questionnaire était bien inférieur à celui du questionnaire pré-atelier. Le rapport contient des recommandations visant à améliorer l'organisation, le contenu et l'évaluation des futurs ateliers.

RESUMEN

En 2023 se celebraron dos talleres en línea de un día de duración sobre evaluación de estrategias de ordenación (MSE); uno dirigido principalmente a científicos, el 13 de junio, y otro a gestores pesqueros, el 13 de octubre. Tres instructores impartieron la formación en tres idiomas oficiales de ICCAT, inglés, francés y español, con el apoyo de traducción simultánea. Todos los documentos del taller y el material del curso se facilitaron a través de Google Classrooms e incluían en su mayoría documentos publicados por ICCAT. Google Classroom ha demostrado ser una forma eficaz de apoyar la formación de ICCAT. Un cuestionario realizado a los participantes antes del taller permitió conocer sus expectativas. Estas expectativas coincidían con las asumidas por los instructores al diseñar el taller. Un cuestionario posterior al taller intentó evaluar su éxito. La información de la encuesta posterior al taller tiene una utilidad limitada, ya que el número de respuestas a esta encuesta fue muy inferior al de la encuesta previa al taller. El informe contiene recomendaciones para mejorar la impartición, el contenido y la evaluación de futuros talleres.

KEYWORDS

Management, Assessment, Harvest Control Rules, Training

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Introduction

ICCAT has implemented management strategies for three stocks, North Atlantic albacore, Western and Eastern Atlantic bluefin tuna and is developing Management Strategy Evaluations (MSE) for a few more including the northern stock of swordfish, the western stock of skipjack and the multi-stock complex of eastern skipjack, yellowfin, and bigeye tunas. ICCAT has identified a need to improve the capacity of contracting parties (CPCs) to participate and contribute to the process of developing management and harvest strategies and has been engaging in various activities for that purpose including developing information documents and conducting seminars and workshops. This training need was identified by the Commission in its circular #2596/2023:

“ICCAT has recognized the need to increase the capacity of their members, both scientists and managers, to fully engage and participate in the process of development and implementation of MSEs. It is in the interest of ICCAT that commissioners from all Contracting Parties have a sufficient understanding of MSE to participate in the process of decision making on proposed candidate MPs. It is in the interest of the SCRS that a larger group of scientists can participate in the development of MSEs to make sure that all CPCs have a chance to contribute their expertise to the MSE process and to ensure that there is enough technical capacity within the SCRS to accomplish the MSE road map agreed by the ICCAT Commission.”

The SCRS identified the need to provide specific training for CPCs interested in participating in the development of MSEs for tropical tunas. Fisheries for tropical tunas involve fleets of many CPCs where MSE capacity is limited. Moreover, ICCAT is currently developing a multi-stock tropical tuna MSE that is particularly challenging technically and procedurally thus the need for specific training on MSE.

This report provides a summary of the one-day online workshops conducted on June 13 and October 13, 2023. The first author of this report is the coordinator of the workshop, who was awarded the contract.

As specified in the instructions in ICCAT circular #2596/2023, workshops were designed to produce the following outcomes:

“

- *For participants to learn the basic concepts about MSE.*
- *To learn about the state of development of tropical tuna MSEs.*
- *For participants to learn how to contribute to the MSE process.”*

Understanding these three concepts helps solidify basic knowledge about the principles surrounding the MSE process. Furthermore, a good understanding of these principles are essential requirements for those interested in practical training courses on the development and application of MSE methods.

1. Process of workshop development

The proposed work was divided into four major tasks, announcement of workshop and selection of participants, development of workshop training materials, workshop instruction, and evaluation of workshop success. The coordinator of the workshop was supported on these tasks by two other instructors, Rodrigo Sant’Ana and Bruno Mourato. These two instructors led three other ICCAT MSE workshops in 2021 (FADURPE 2021).

1.1 Workshop announcement and participant selection

A single announcement (ICCAT Circular #4561/2023) was made for the 2023 workshops and prepared by the ICCAT secretariat in collaboration with the workshop coordinator, the coordinator of the tropical tuna working group and the SCRS Chair. The announcement was distributed by the ICCAT Secretariat to all CPCs and identified the participants considered priority attendees:

“

- *participants from developing country CPCs.*
- *participants from a diversity of CPCs*
- *scientists involved in the SCRS process.*
- *managers involved in the Commission process.”*

Participants were able to apply directly to the ICCAT Secretariat once they obtained the approval of their respective ICCAT head delegate.

The selection of invited participants was conducted by the workshop coordinator and ICCAT Secretariat staff from the list of applicants received at the Secretariat. The final list of participants was approved by the SCRS Chair.

1.2 Preparation of workshop materials and delivery to participants

Development of instructional materials required for the workshop was done by the coordinator and the two instructors. All materials were provided to the participants from CPCs, when possible, in Spanish, French and English (see **Annex 1**). Some of the materials were provided to the participants prior to the workshops and all were available through Google Classrooms developed for the workshop (**Figure 1**). ICCAT classrooms and their materials and documents are presently only available to those participating in the workshops. Before such materials are made available to other members of the SCRS, they should be reviewed by the SCRS.

The workshop schedule was similar for both workshops, but the material and presentations were tailored to the different audiences each had, scientists for the first workshop and managers for the second (**Table 1**).

2. Results

Forty-two people registered for the first workshop, and twenty-nine attended it. Forty-six registered for the second workshop and twenty-five attended it. In total representatives from twenty ICCAT CPCs attended at least one workshop (**Table 2**). Only five CPCs had participants present in both workshops, and two participants attended both workshops.

The workshops took place over a single day online with four daily sessions, two in the morning, and two in the afternoon. Sessions were separated by short breaks during morning and afternoon and a longer break at lunchtime. Presentations were made primarily in English, and a few in French and Spanish. Simultaneous translation was available in the three languages. Participants could express themselves in their language of preference and instructors were able to respond in the language of the participant whenever possible.

The coordinator provided background documents in the Google Classroom site as references for each of the topics in the workshop. When possible, these documents were sourced from the collection of ICCAT publications to maintain consistency with the way concepts are presented to ICCAT, and use terminology already adopted by ICCAT. When this was not possible, multilingual documents from Harveststrategies.org were used. This practice also allowed for providing many of the documents in the three official languages of ICCAT. Participants agreed this was useful but recommended that all documents in these training workshops be translated to all three languages.

2.1 Pre-and post-workshop evaluation survey

Before and after the workshop, participants were asked to fill in a short survey to help the coordinator evaluate the training's effectiveness (**Tables 3 and 4**). Survey questions that were administered through www.surveymonkey.com and detailed results of the surveys. Fifty participants responded to the pre-workshop survey (96% response rate) but only eight responded to the post-workshop survey (15% response rate). The coordinator designed, implemented, and analyzed the survey results. All responses to the pre-workshop survey are provided in **Table 5** and **Figure 2** and those to the post-workshop survey in **Table 6** and **Figure 3**.

3. Conclusions and recommendations

The workshop attracted participants from a range of ICCAT experiences, with half of the participants having been involved in ICCAT three years or less but close to one fifth having been involved in ICCAT for more than 10 years. In both workshops there was a high proportion of participants that registered but were not able to attend. It would be important to determine the reasons for such lack of participation. As planned, about half of the participants were managers and the other half were scientists. Among scientists there was a range of expertise, but most are responsible of data collection. Forty-two percent had never received MSE training and thirty-four percent had received formal MSE training. The remaining twenty-four percent had learned about MSE on their own. Although MS Excel is the most common software used by participants to support their ICCAT responsibilities, a

few of participants use advanced quantitative programming languages like R and SQL. Participants are split rather evenly between the three categories about their knowledge about MSE (little, some, moderate). In general, the workshop syllabus matched their desire to learn about MSE related topics. Some, however, mentioned other topics that could be covered during such a workshop. Some of the most interesting propositions included coding of MSE simulations, MSE and effort controls, MSE implementation, and multi-year management. In summary, participants ranged from those that demonstrated good theoretical knowledge about MSE, and who are already looking for more advanced MSE courses, to those that were barely aware of the most basic and theoretical concepts behind MSE. This was expected, given the evolution of training and frequent discussions on this topic at ICCAT Commission and SCRS meetings.

The Google Classroom platform used to deliver materials and communicate with workshop participants worked well and was a valuable tool for the course. For this workshop, we chose to develop one classroom in each language which requires maintaining multiple copies of documents and restricts communication to participants who sign in each classroom. It may be worthwhile exploring whether it is possible to develop multi-language classrooms. During the workshop, some participants signed up to multiple classrooms as they were multilingual.

Participation in the workshop was clearly enhanced by the ability of participants to speak and present in their own language of choice and by the availability of simultaneous translation. The use of documents from ICCAT and Harveststrategies.org ensured that most documents were available in the three languages. But some publications in peer-reviewed journals are only available in one language. Participants insisted that ideally every document made available should be translated into each ICCAT language.

Responses to the post-workshop survey suggest the workshop was a success, however participation in the second survey was much lower than in the first. Most respondents reported that the workshop covered their topics of interest. There were some complaints about the quality of the audio. It is hard to know whether these problems were related to the participants' equipment, or the equipment used by instructors. Many respondents agreed that they would be interested in longer workshops on this topic, especially if more time was devoted to practical exercises.

The authors recommend the following:

- Investigate ways to reduce the number of registered participants who do not attend the workshop.
- SCRS should consider Google Classroom as a platform as a feasible option for course and training delivery of ICCAT activities.
- Post-workshop surveys should be provided at the end of the workshop or immediately after to increase response rates.
- Longer, advanced, and more practical workshops focusing on specific topics of MSE should be considered.

References cited

Fadurpe 2021. Fundação Apolônio Salles de Desenvolvimento Educacional. MSE training courses to build capacity on Management Strategy Evaluation methods for fisheries scientists, managers, and stakeholders. Final Report Nb. 2 to ICCAT. 16 p.

Acknowledgments

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Documents and presentations included in Google classrooms by workshop topic

Background

Resources on Harvest Strategies. <https://harveststrategies.org/what-are-harvest-strategies/resources>
Harvest strategies Glossary. <https://harveststrategies.org/what-are-harvest-strategies/glossary>

Harvest Strategies

Harvest Strategies: 21st Century Fisheries Management. <https://www.pewtrusts.org/en/research-and-analysis/issue-briefs/2019/11/harvest-strategies-21st-century-fisheries-management>

Harvest strategies. Presentation by David Die

Management Strategy Evaluation

Introduction to Management Strategy Evaluation (MSE). Presentation by Bruno Mourato.

Management strategy Evaluation. <https://www.iccat.int/mse/en/index.asp>

Management strategy Evaluation for fisheries. <https://www.pewtrusts.org/en/research-and-analysis/fact-sheets/2016/11/management-strategy-evaluation-for-fisheries>

Shiny App. <https://harveststrategies.org/management-strategy-evaluation/shiny-app/>

Harvest strategies at ICCAT

ICCAT MSE roadmap. https://www.iccat.int/com2021/eng/ple_113a_eng_rev2.pdf

Western Atlantic skipjack tuna management strategy evaluation. Presentation by Rodrigo Sant'Ana.

Merino G., D. Die, A. Urtizberea, and A. Laborda 2021. Progress on characterization of structural uncertainty in tropical tuna stocks' dynamics with summary of discussions held during the Tropical Tuna MSE Meeting (29-31 March 2021). ICCAT Coll. Vol. Sci. Pap. 78: 227-230.

Merino G. et al 2018. Final report of the ICCAT short-term contract: modelling approaches - support to ICCAT tropical tunas MSE process. ICCAT Coll. Vol. Sci. Pap. 76: 997-1009

Table 1. Agenda of workshops.

1. Welcome and Introductions – 15 mins (D.Die)
 - a. General introduction of participants and trainers
 - b. Overview and objectives of the course
2. Course expectations – 15 min (participants)
3. Introduction to Management Procedures (MPs) – 60 mins (D. Die)
 - a. Elements of MPs
 - i. Spotlight on setting Management Objectives
 - ii. Spotlight on Harvest Control Rules
 - b. Benefits of MPs

Working break – 30 min
4. Introduction to Management Strategy Evaluation – 60 mins (Sant’Ana/Mourato)
 - a. Elements of MSE
 - b. How is MSE different from current stock assessment practice?
 - c. What are the benefits of MSE?
 - d. MPs and MSE @ ICCAT
5. Demonstration of MSE application – 30 min (Die)

Lunch break - 1 hr 30 min
6. MSE Exercise – 90 min (Mourato/Sant’Ana/Die)

Working break – 30 min
7. State of Tropical tunas MSE development – 60 mins
 - a. Multispecies MSE (Die)
 - b. Western Skipjack MSE (Mourato/Sant’Ana)
8. Review and conclusions – 30 min (Participants)

Table 2. List of participants.

Contracting party/NGO	Participant	E-mail	Role	Workshop
Barbados	Colvin Taylor	colvin.taylor@barbados.gov.bb	Manager	Oct
Belize	Charles Coc	charles.coc@bhsfu.gov.bz	Scientist	Jun
	Robert Robinson	robert.robinson@bhsfu.gov.bz	Scientist	Jun
Brazil	André L. Bispo Oliveira	andre.oliveira@mpa.gov.br	Manager	Oct
	Alex Souza Lira	alex.lira@mpa.gov.br	Manager	Oct
China P.R.	Ji Feng	fengji_shou@163.com;	Manager	Oct
Costa Rica	Erik Umaña Vargas	eumana@incopesca.go.cr	Manager	Oct
	Bernal Pacheco Chaves	bpacheco@incopesca.go.cr	Scientist	Jun
	Liliana Álvarez Sánchez	lalvarez@incopesca.go.cr	Scientist	Jun
Curacao	Carl Michael Suarez	michael.suarez@gobiernu.cw	Scientist	Jun
Egypt	Walid Mohamed Elsayy	walid.soton@gmail.com	Scientist	Oct
	Mahmoud M. S. Farrag	m_mahrousfarrag@yahoo.com	Scientist	Oct
European Union	Isabel Teixeira	iteixeira@dgrm.mm.gov.pt	Manager	Oct
	Mariana Tolotti Travassos	mariana.travassos@ird.fr	Manager	Oct
	Patricia Trigo	pandrada@dgrm.mm.gov.pt	Manager	Oct
	Stamatios Varsamos	Stamatios.VARSAMOS@ec.europa.eu	Manager	Oct
	Juliette Haziza	juliette.haziza@developpement-durable.gouv.fr	Manager	Oct
	Lucía Rueda Ramírez	lucia.rueda@ieo.csic.es	Scientist	Jun
	Santiago Félix Déniz González	santiago.deniz@ieo.csic.es	Scientist	Jun
	Jonusas, Stanislovas	Stanislovas.Jonusas@ec.europa.eu	Scientist	Jun
Gabon	Rojo Méndez, Vanessa	vanessa.rojo@ieo.csic.es	Scientist	Jun
	Davy Angueko	Davyangueko83@gmail.com	Scientist	Jun, Oct
Guatemala	Bernal Chavarría Valverde	bchavarria@lsg-cr.com	Manager	Jun
	Carlos Eduardo Martínez Valladares	carlosmartinez41331@gmail.com	Scientist	Jun
	Lucía Gabriela López Ruano	lucialopezruano95@gmail.com	Scientist	Jun
	Jennifer Michelle Hernández Muralles	michelledipescas@gmail.com	Scientist	Jun
Guinea Rep.	M. Mohamed Soumah	Soumahmohamed2009@gmail.com	Scientist	Jun
Maroc	Bouchra Haoujar	haoujar@mpm.gov.ma	Manager	Oct
	Fatima Zohra Hassouni	hassouni@mpm.gov.ma	Manager	Oct
Mauritania	Beyahe Meissa Habibe	bmouldhabib@gmail.com	Scientist	Oct
Mexico	Karina Ramírez López	karina.ramirez@inapesca.gob.mx	Scientist	Oct
Panama	Aramis Aparicio			Oct
	Yesuri Pino	bpacheco@incopesca.go.cr	Scientist	Jun
	Modesta Torres	mtorres@arap.gob.pa	Scientist	Jun
	Robert Duarte	rduarte@arap.gob.pa	Scientist	Jun
Nicaragua	Julio César Guevara Quintana	jguevara@inpesca.gob.ni	Scientist	Jun
	Renaldy Antonio Barnuty Navarro	rbarnutti@inpesca.gob.ni	Scientist	Jun
	Roberto Danilo Chacón Rivas	rchacon@inpesca.gob.ni	Scientist	Jun
Nigeria	Akanbi Bamikole Williams	abwilliams2@yahoo.com	Scientist	Jun
	Usman Garba	garbashafa@gmail.com	Scientist	Jun
Senegal	Kamarel Ba	kamarel2@hotmail.com	Scientist	Jun
	Ibrahima Diouf	ivesdiouf@gmail.com	Manager	Oct
	Fambaye Ngom Sow	ngomfambaye2015@gmail.com	Scientist	June, Oct
	Mamadoue Seye	sidindaw@hotmail.com	Manager	Oct
Trinidad and Tobago	Elizabeth Mohammed	emohammed.2fdtt@gmail.com	Scientist	Jun
	Janelle Daniel	janelledaniel@gmail.com	Scientist	Jun
	Louanna Martin	lmartin@fp.gov.tt;	Scientist	Jun
United States	Kimberly Blankenbeker	kimberly.blankenbeker@noaa.gov	Manager	Oct
	Melanie Diamond King	melanie.king@noaa.gov	Manager	Oct
	Larry Redd Jr.	larry.redd@noaa.gov	Manager	Oct
	Callan Yanoff	yanoffcj@state.gov	Manager	Oct
TOF	John Bohorquez	jbohorquez@oceanfdn.org	Observer	Oct
ICCAT	Mauricio Ortiz	mauricio.ortiz@iccat.int	Scientist	June
Instructors	David Die	dddejean@kutaii.com	Coordinator	June, Oct
	Rodrigo Sant'Ana	rsantana@univali.br	Instructor	June, Oct
	Bruno Mourato	bruno.mourato@unifesp.br	Instructor	June, Oct

Table 3. Pre-Workshop survey questions.

Responses to this questionnaire will be used exclusively to evaluate the success of the workshop. Responses to this questionnaire are anonymous and voluntary. It should take only a few minutes to answer the 10 questions included in it.

1. What responsibilities do you have regarding ICCAT fisheries?
 - I am a scientist mainly in charge of data collection and analysis as indicators of fishing activity.
 - I am a scientist, mainly in charge of population biology and ecological analyses
 - I am a scientist mainly involved in stock assessment
 - I am a fisheries manager/administrator in charge of supporting the work of the representatives of my country in the ICCAT Commission
 - Other (specify your responsibility)
2. How many years have you been involved in ICCAT fisheries?
 - less than three years
 - More than three years and less than ten
 - more than ten years
3. Do you have fisheries research/management responsibilities for non-ICCAT fisheries?
 - No, I only work on ICCAT fisheries
 - Yes, I work with other fisheries as well
 - If you answered yes, specify for which other fisheries
4. What software do you use in your work related to ICCAT?
 - I use EXCEL
 - I use databases like MS'ACCESS, SQL
 - I Use R
 - Others specify
5. Have you ever received specific training on Management Strategies or Evaluation of management strategies?
 - No, I have never received specific training on these topics or tried to learn on my own with specific digital or text resources on these topics.
 - Yes, but my training is self-taught, using the resources that I have found or received, but not through a specific program designed on these topics.
 - Yes, I have participated in specific activities/courses related to MSE before
 - If you have participated in activities/courses before, tell us which ones
6. How would you describe your level of knowledge on the topics of this workshop?
 - Little knowledge about the topics. Only a vague idea about certain basic concepts
 - Moderate knowledge of basic concepts
 - I consider myself an expert on the basic concepts of MSE
7. What aspects of MSE or management strategies interest you the most and that we should focus more during the workshop_
8. What do you hope to learn in this workshop?

Table 4. Post-Workshop survey questions.

1. Did the workshop cover properly the topics you were most interested in?			
<input type="radio"/> No, the workshop did not cover the topics properly	<input type="radio"/> Sort of, the workshop covered some of the topics properly, others no	<input type="radio"/> Yes, the workshop cover most of the topics properly a few no	<input type="radio"/> Yes, the workshop cover all topics properly
2. Did the workshop help you improve your understanding of Harvest strategies and MSE?			
<input type="radio"/> Yes, it was clear and well structured	<input type="radio"/> Somewhat, but it was a bit too simple and should have gone into more detail	<input type="radio"/> Somewhat, but it was too complicated, it should be simplified	<input type="radio"/> No, it was too complicated and not well presented
Specify any shortcomings in the design of the workshop, or its implementation.			
3. Was the presentation on the general aspects of the Harvest Strategies and the MSE process appropriate and easy to understand			
<input type="radio"/> Yes, it was clear and well structured	<input type="radio"/> Somewhat, but it was a bit too simple and should have gone into more detail	<input type="radio"/> Somewhat, but it was too complicated, it should be simplified	<input type="radio"/> No, it was too complicated and not well presented
Provide more specific comments on this topic (Optional)			
4. Was the presentation on Harvest Strategies appropriate and easy to understand			
<input type="radio"/> Yes, it was clear and well structured	<input type="radio"/> Somewhat, but it was a bit too simple and should have gone into more detail	<input type="radio"/> Somewhat, but it was too complicated, it should be simplified	<input type="radio"/> No, it was too complicated and not well presented
Provide more specific comments on this topic (Optional)			
5. Was the exercise with SLICK useful?			
<input type="radio"/> Yes, it was clear and well structured	<input type="radio"/> Somewhat, but it was a bit too simple and should have gone into more detail	<input type="radio"/> Somewhat, but it was too complicated, it should be simplified	<input type="radio"/> No, it was too complicated and not well presented
Provide more specific comments on this topic (Optional)			
6. Was the presentation on the definition and components of a MSE appropriate and easy to understand			
<input type="radio"/> Yes, it was clear and well structured	<input type="radio"/> Somewhat, but it was a bit too simple and should have gone into more detail	<input type="radio"/> Somewhat, but it was too complicated, it should be simplified	<input type="radio"/> No, it was too complicated and not well presented
Provide more specific comments on this topic (Optional)			
7. Was the presentation on the development of tropical tuna MSEs useful and appropriate?			
<input type="radio"/> Yes, it was clear and well structured	<input type="radio"/> Somewhat, but it was a bit too simple and should have gone into more detail	<input type="radio"/> Somewhat, but it was too complicated, it should be simplified	<input type="radio"/> No, it was too complicated and not well presented
Provide more specific comments on this topic (Optional)			
8. Was the format of the workshop appropriate, common on positive and negative aspects of the workshop and ideally provide suggestions on how to improve it			
9. Due to the scope and duration of the workshop, time for practical applications related to MSE, like running MSE apps and learning about MSE software was limited. Would you be interested in participating in a longer workshop with an emphasis in MSE software and applications?			

Table 5. Results of Pre-workshop survey (Questions 7-8).

Question 7

Topics most interested in	Number of responses
Management procedures	4
Management Objectives	3
HCR	2
Benefits of MPs	3
MSE	6
MSE vs Stock assessments	4
Benefits of MSE	1
MPs and MSEs in ICCAT	2
MSE Demo	1
TT Multi-stock MSE	2
WSKJ MSE	1
Others (Multiyear management, presentation of scientific advice, species managed by ICCAT, effort controls, how MSE is related to stock status, catch limits, reference points and probabilities)	

Question 8

Most answered to increase their knowledge on topics covered in the course.

Other topics mentioned: EBFM, how a manager can add value to the system and to learn any connection of MSE and fishermen, besides enforcement, MSE implementation, catch monitoring, coding MSE in R, increase capacity to contribute to ICCAT, management on the medium term.

Table 6. Results of Pre-workshop survey (Questions 8-9).

Question 8

Format of workshop

Yes, it was. Oui, il était approprié. Positif sur l'interaction avec les instructeurs, la traduction. Négatif juste à cause de la connexion dans mon cas qui ne permettait pas de bien suivre l'atelier. Mettre peut-être l'accent sur le processus de simulation pour l'évaluation des OP. Les incertitudes, plus d'informations. Malheureusement en ligne nous sommes confrontés aux problèmes techniques et de connexion. De plus, le temps pour ce type d'atelier n'est pas assez. Cela doit faire l'objet de deux ou trois. Le format était simple, pour mieux comprendre il faut plus de temps et que ça soit interactif. Le format présentiel est mieux approprié. Positivo: personal altamente calificado, orden en los temarios. Negativo: corto tiempo. El formato fue más que apropiado y las explicaciones fueron perfectas. El sonido en la presentación ... fue regular ... su presentación la que menos entendí. De resto muy bien.

Question 9

Interested in longer workshop?

Yyes, thank you. Le temps était limité pour contenir les échanges, les présentations et les exercices. Plus de temps à l'avenir pour la prise en main de l'application SLICK. Oui trois à cinq jours. Très intéressé à participer à un atelier plus long pour mieux comprendre. Si, me interesaría. Estaría encantada e interesada en participar en otro taller similar o más largo. Muchas gracias por todo!!!!

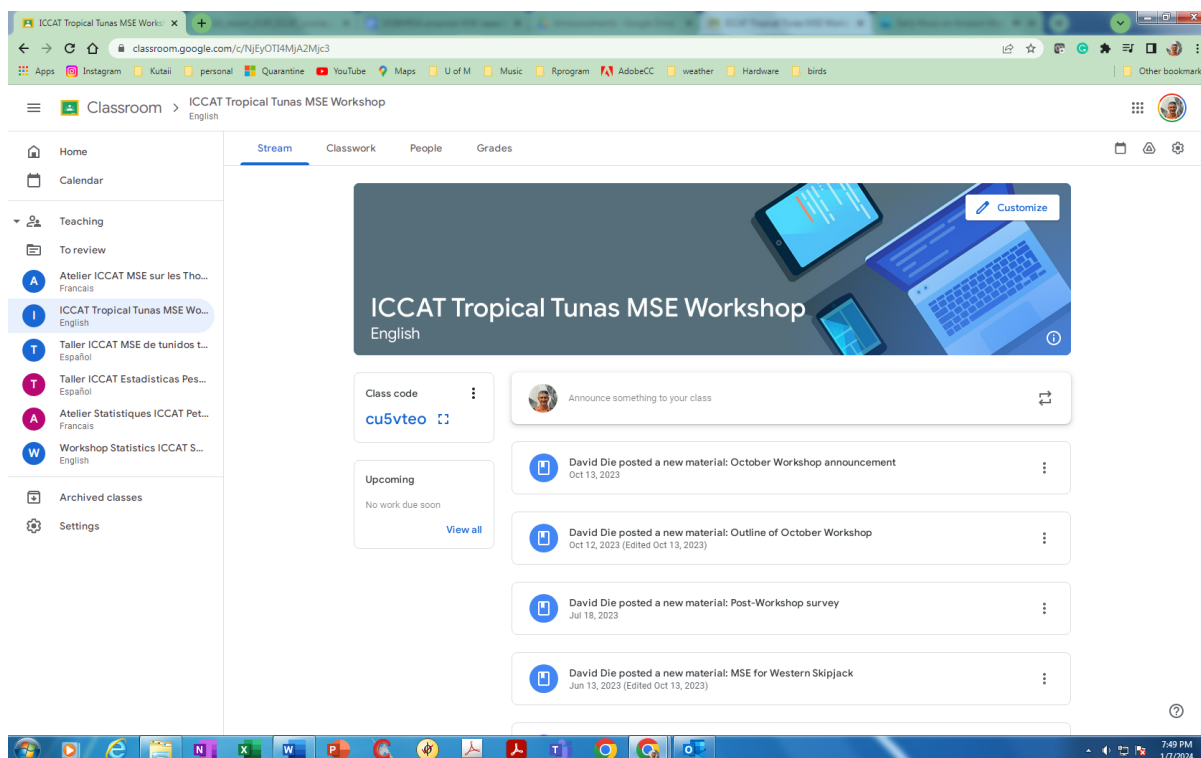
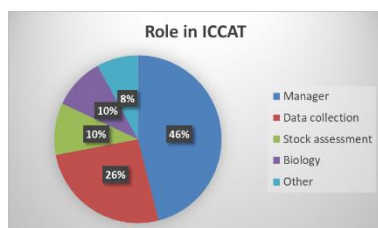
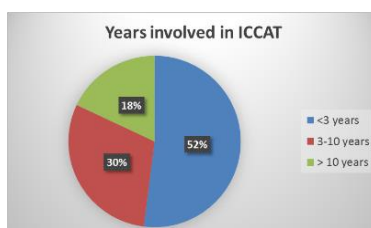


Figure 1. Google Classroom for the workshop. Only part of the classwork materials is displayed in the image. Image only shows page in English. Similar classrooms were available in English and Spanish.

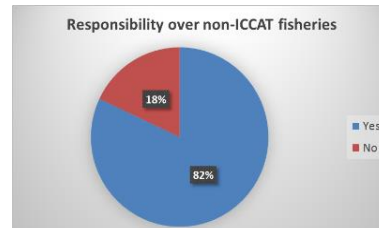
Question 1



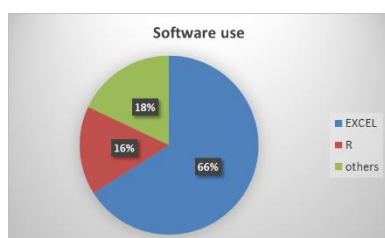
Question 2



Question 3



Question 4



Question 5



Question 6

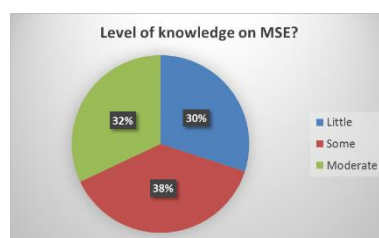
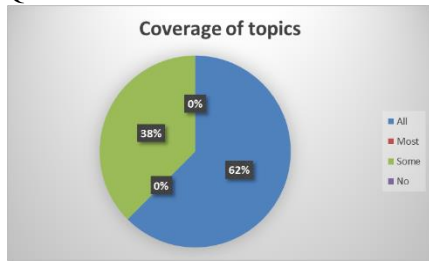
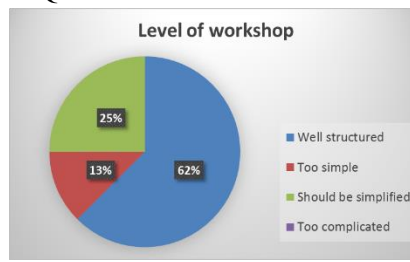


Figure 2. Results of Pre-workshop survey (Questions 1-6).

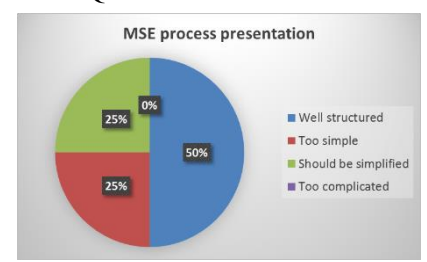
Question 1



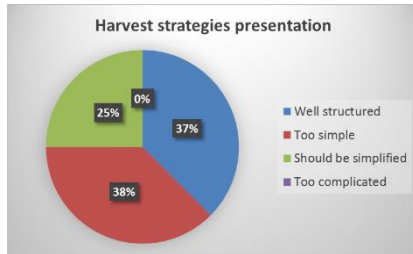
Question 2



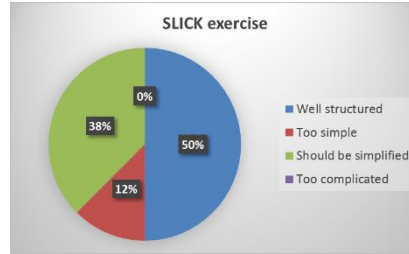
Question 3



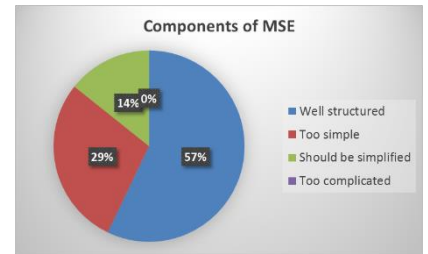
Question 4



Question 5



Question 6



Question 7

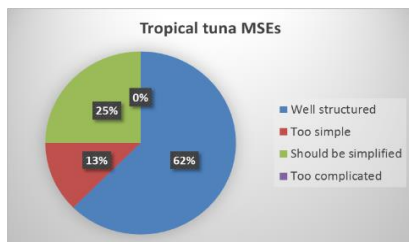


Figure 3. Results of post-workshop survey (Questions 1-7).