

# ICES SGFOT REPORT 2009

ICES FISHERIES TECHNOLOGY COMMITTEE

ICES CM 2009/FTC:03

REF. SCICOM

## Report of the Study Group on Fisheries Optical Technologies (SGFOT)

16–17 May 2009

Ancona, Italy



**ICES**

International Council for  
the Exploration of the Sea

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Conseil International pour  
l'Exploration de la Mer

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Recommended format for purposes of citation:

ICES. 2009. Report of the Study Group on Fisheries Optical Technologies (SGFOT), 16–17 May 2009, Ancona, Italy. ICES CM 2009/FTC:03. 7 pp.

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## **Executive summary**

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The Study Group on Fisheries Optical Technologies (SGFOT) held its third and final meeting at the National Research Council – Institute of Marine Sciences, Ancona, Italy on 16–17 May 2009. The meeting was hosted by Antonello Sala (Italy) and Eirik Tenningen (Norway) was Chair. There were 12 participants from Australia, Canada, Denmark, Germany, New Zealand, Norway, Sweden and USA.

The main focus was to review and finalise the *ICES Cooperative Research Report (CRR)* draft. The chapter headings are:

- Introduction
- Optical Technologies
- Integration
- Data Processing
- Application
- Recommendations
- Glossary
- Suppliers
- References

A draft resolution for an ICES Internal Publication and recommendations for future work within fisheries optical technologies are given.

## 1 Terms of Reference

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The **Study Group on Fisheries Optical Technologies** [SGFOT] (Chair: E. Tenningen, Norway) will meet in Ancona, Italy on 16–17 May 2009 to:

- a) Review and finalise the Cooperative Research Report draft on optical technology as agreed at the 2008 SGFOT meeting;
- b) Finalise recommendations for future work within optical technology to service the ecosystem approach for fisheries management.

## 2 Introduction

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The Study Group on Fisheries Optical Technologies (SGFOT) held its third and final meeting at the National Research Council – Institute of Marine Sciences, Ancona, Italy on 16–17 May 2009. The meeting was hosted by Antonello Sala (Italy) and Eirik Tenningen (Norway) was Chair.

The focus of the meeting was to finalise the Cooperative Research Report draft on Fisheries Optical Technologies and make recommendations for future work within optical technology to service the ecosystem approach for fisheries management.

Informal presentations were held by several meeting participants on “Under-water video for fisheries management: Confirmation of the “specialist” theory for seals raiding fishing gear” (Arne Fjälling, Sweden), “Electronic Monitoring in Swedish coastal fisheries: Pilot trial in the Baltic Sea” (Arne Fjälling, Sweden), “Development of long range pinger test device” (Harald Wienbeck, Germany) and “Blue View” (Bo Lundgren and Dennis Lisbjerg, Denmark).

## 3 Evaluation of progress of the review of optical technology and finalising of cooperative research report draft

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To address the Terms of Reference a) the group reviewed the cooperative research report draft produced at the 2007 and 2008 meetings and evaluated the writing process.

The revised cooperative research report outline is given in section 3.1. Eirik Tenningen (Norway) and James H. Churnside (USA) will be report editors and a chapter coordinator for each chapter is appointed. The chapter coordinator will be responsible for writing an introduction and synthesis for each chapter as well as supervising the writing of each section in the chapter. One or two responsible authors are appointed for each section.

### 3.1 Cooperative Research Report (CRR) outline

The following CRR outline has been agreed by the group. To limit the length of the report some topics are only briefly described in the introduction, e.g. satellite monitoring and non-imaging optical sensors. This does not mean that the group find these technologies less important, but rather reflects the expertise within the group.

**Executive summary****Contents****Introduction****Optical Technologies**

- Cameras
- Lidar
- External lighting
- Optical counters
- Imaging sonar
- Laser line scanning
- Range gated lasers
- Optical oxygen sensor
- Holography
- Hyperspectral imaging

**Integration**

- Platforms
- Power sources
- Electronics
- Control and display software
- Synchronisation of data streams
- Recording media
- Geo location

**Data Processing**

- Stereo cameras
- Image analysis
- Image interpretation
- Data compression and file formats
- Data management
- Meta data
- Calibration
- Measurement uncertainty

**Applications**

- Optical surveys
- Fishing gear performance
- Lidar surveys
- Supporting acoustic measurements
- Behaviour
- Fishery observation
- Outreach
- Catch sampling

- Habitat classification

#### **Recommendations**

#### **Glossary**

#### **Suppliers**

#### **References**

### **3.2 SGFOT time schedule**

The group is working according to the following time schedule for completing the CRR:

30.09.2009 – First complete Cooperative Research Report draft

28.02.2010 – Final Cooperative Research Report draft submitted

## **4 Discussion and recommendations for future work within optical technology**

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The group discussed recommendations for future work during the Ancona meeting.

One of the topics the group has been asked to discuss is the creation of a new Working Group on Fisheries Optical Technologies. The group evaluated three possible solutions:

- Start a new working group dealing specifically with optics
- Include optics within FAST as a complementary technology
- Change FAST to include more technologies for observation and assessment of marine living resources with emphasis on the science of observation and quantification with non extractive technologies

During the discussions a major concern was that a new separate Working Group on Fisheries Optical Technologies would not survive due to the close connection with WGFAST. The people likely to attend an optical WG are mostly from the WGFAST community and justifying two working group travels per year may be difficult.

The group agreed that continuing within or together with WGFAST would be the best solution and this recommendation was sent to WGFAST for further discussions.

After some discussion during the WGFAST meeting it was the preferred position of SGFOT and WGFAST members to include optical systems as a complementary method within the working group. The issues that governed this decision were the common approaches between optical and acoustics, the complementary scales of observations and keeping a cohesive group together with multidisciplinary skills. Bill Karp suggested that this be discussed in more detail at the ICES September ASC meeting.



The group had a general discussion on recommendations for future work within optical technology to service the ecosystem approach for fisheries management resulting in the following list:

- Standardising image analysing software and databases
- Develop standard methodology for making video analysis easier
- Video mosaicing and habitat classification
- Further develop optical technologies for observatories
- Investigate the perception and use of light by fish
- The use of optical technologies for validation of acoustic detections

## Annex 1: List of participants

Name		E-mail address	Institution	Country
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## Annex 2: Draft Resolution for an ICES Internal Publication

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The report on the **Fisheries Optical Technologies**, edited by Eirik Tenningen (Norway) and James H. Churnside (USA), as reviewed and approved by the Chair of the SSGESST, will be published in the *ICES Cooperative Research Report* series. The estimated number of pages is 120.

The Study Group on Fisheries Optical Technologies (SGFOT) agrees to submit the final draft of the proposed publication by 28 February 2010.

### Supporting Information

Priority:	The outcome of the report will lead ICES into improved techniques for surveying marine living resources and methods for improving existing survey strategies. Consequently, these activities are considered to have very high priority.
Scientific justification and relation to action plan:	The forthcoming ICES Cooperative Research Report represents a synthesis of the most recent scientific work on fisheries optical technologies. Optical technologies for surveying fisheries resources, improving other techniques for surveying fisheries resources, and or characterizing fish behaviour are increasing in their accessibility, popularity, and value to fisheries management. The CRR is of relevance to the ICES Action Plan 1.2, 1.10, 1.12, 1.13 and 1.14.
Resource requirements:	Publication of this material as a CRR will cost ca. 10 000 DKK. The material in the report is fairly straightforward, and therefore no specific additional costs are necessary.
Participants:	Approximately 2-month work is required by the authors and a further month by the editors to finalise this draft.
Secretariat facilities:	About one month of the services of Secretariat Professional and General Staff will be required.
Financial:	Publication costs.
Linkages to advisory committees:	There are no obvious direct linkages with the advisory committees.
Linkages to other committees or groups:	There is a close working relationship with WGFAST and WGFTFB.
Linkages to other organizations:	None