

**REPORT OF THE
STOCK IDENTIFICATION METHODS WORKING GROUP**

By Correspondence

2000

This report is not to be quoted without prior consultation with the General Secretary. The document is a report of an expert group under the auspices of the International Council for the Exploration of the Sea and does not necessarily represent the views of the Council.

Conseil International pour l'Exploration de la Mer

Palægade 2–4 DK–1261 Copenhagen K Denmark

<https://doi.org/10.17895/ices.pub.9705>

TABLE OF CONTENTS

Section	Page
1 MAIN TASKS AND PARTICIPANTS	3
2 STOCK IDENTIFICATION METHODOLOGY	3
3 FUTURE MEETING.....	3
4 RECOMMENDATION	3
APPENDIX 1	4
APPENDIX 2.....	5
APPENDIX 3.....	6

1 MAIN TASKS AND PARTICIPANTS

At its 1999 Annual Science Conference, ICES resolved (C.Res. 1999/2G10) that a Working Group on Stock Identification Methods will meet by correspondence under the chairmanship of Dr. K. Friedland (USA) and Dr. J. Waldman (USA). The terms of reference indicated that the Working Group would continue to develop the Stock Identification Methodology and advise on future meetings of the Working Group (Appendix 1).

The Working Group participants in 1998-1999 were as follows, with addresses given in Appendix 2.

Participants

S. Cadrin	USA
K. Friedland (Co-Chair)	USA
J. Waldman (Co-Chair)	USA

2 STOCK IDENTIFICATION METHODOLOGY

The Working Group considered various approaches to finishing its work on the Stock Identification Methodology. Many of the sections originally proposed for the Methodology appeared redundant, thus the Working Group revised the table of contents to conform to what it anticipates will be a final product for the Methodology. This revision can be found in appendix 3, but it should be remembered that though none of the sections are marked as completed, many of the sections (approximately one third) are transferable from the content developed in previous years. With so much of the work already completed, and the contribution of volunteered sections slowing down, it was felt the critical remaining sections would have to be filled by directed solicitation. The co-chairs will take on this task in the coming year.

3 FUTURE MEETING

The Working Group did not identify the need for a meeting at this time, but would recommend that the subject remain on the terms of reference for future consideration.

4 RECOMMENDATION

The Working Group recommends that Steve Cadrin (USA) be added as a co-chair of the Working Group.

The Working Group further recommends:

The Stock Identification Methods Working Group [SIMWG] (Co-Chairs Dr. K.D. Friedland, Dr. J. Waldman, and S. Cadrin, USA) work by correspondence in 2001 to:

- a) continue development of the Stock Identification Methodology;
- b) advise on the need for future meetings of the SIMWG, and prepare appropriate Terms of Reference if required.

SIMWG should report on progress to the Living Resources Committee at the 2001 Annual Science Conference.

APPENDIX 1

TERMS OF REFERENCE

The Stock Identification Methods Working Group [SIMWG] (Co-Chairs Dr. K.D. Friedland and Dr. J. Waldman, USA) will work by correspondence in 2000 to:

- a) continue development of the Stock Identification Methodology;
- b) advise on the need for future meetings of the SIMWG, and prepare appropriate Terms of Reference if required.

SIMWG will report on progress to the Living Resources Committee at the 2000 Annual Science Conference.

APPENDIX 2

LIST OF PARTICIPANTS

Name	Address	Phone	Fax	e-mail
Steve Cadrin	National Marine Fisheries Service 166 Water Street Woods Hole, MA 02543 USA	508-495-2335	508-495-2393	scadrin@whsun1.wh.who.edu
Kevin Friedland	UMass/NOAA CMER Program Blaisdell House University of Massachusetts Amherst, MA 01003-0040 USA	413-545-2842	413-545-2304	friedlandk@forwild.umass.edu
John Waldman	Hudson River Foundation 40 West 20th Street Ninth Floor New York, NY 10011 USA	212-924-8290	212-924-8325	hrfound@aol.com

APPENDIX 3

STOCK IDENTIFICATION METHODOLOGY

TABLE OF CONTENTS

INTRODUCTION

Overview

Definition of Management Units, Stock Units, and Populations

Environmental versus Genetic Influence on Identification Characters

LIFE HISTORY TRAITS

Distribution of Life Stages

Growth and Reproductive Characteristics

Life History Parameters in Fish Stock Identification

NATURAL MARKS-MORPHOLOGICAL ANALYSES

Outline Methods

Landmark Methods

Texture Methods

Meristics

NATURAL MARKS-ENVIRONMENTAL

Parasites as Biological Tags

Elemental composition of body parts

Fatty Acid Profiles

NATURAL MARKS-GENETIC ANALYSES

Chromosome Morphology

Allozymes

Mitochondrial DNA

Single Copy, Coding; Single Copy Non-coding Nuclear DNA

Repetitive Nuclear DNA: Micro-satellites and Mini-satellites

Random Amplified Polymorphic DNA (RAPD)

Amplified Length Polymorphic DNA (AFLP)

APPLIED MARKS

Finclipping

Pigments, Dyes, and Brands

Internal and External Tags

Electronic Tags

Otolith Thermal Marking

STOCK IDENTIFICATION DATA ANALYSIS

Variable Selection in Stock Identification Models

Data transformation and Processing

Statistical Algorithms for Stock Composition Analysis

Discriminant Function Analysis

Neural Networks in Classifying Biological Populations

Maximum Likelihood Estimators of Stock Composition

Non-parametric Methods of Estimating Classification Variability

Signal Processing of Optical Profiles

Analysis of Tagging Data

APPLICATION OF STOCK IDENTIFICATION DATA IN RESOURCE MANAGEMENT

Application of Stock Identification Data in Resource Management

Stock Identification Data Requirements in Quantitative Assessments

The Role of Stock Identification Data in Formulating Fishery Management Advice

Identifying Fish Farm Escapees

Real Time Application of Stock Identification Information