

# Safety in sampling

## Methodological notes

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## Preface

Fishery statistical programmes require a great deal of effort and funds for their development and implementation and these are major constraints for many countries with limited human and financial resources. The merit of sampling approaches lies in providing cost-effective and efficient methods for the collection of data, thus accelerating the development of statistics urgently needed by fishery managers and planners.

Collection of basic data on catches, fishing effort and prices constitute a key factor in a wide variety of applications. Sample-based fishery surveys that are conducted on a regular basis constitute an important source of fishery information of wide utility and scope.

To help meet national needs for basic fishery data, FAO has been assisting countries in upgrading their data collection, processing and reporting capabilities. Technical assistance at national and regional level is a significant component of the work programme of FAO's technical units responsible for fishery statistical development and involves both normative and field programme activities. Outputs of normative activities include technical documents on statistical methodology and guidelines for data collection, while field programme activities involve project formulation and implementation, technical backstopping and organization of training courses and workshops.

While the present paper was written with the special concern of sample-based catch/effort assessment surveys for artisanal fisheries, it is envisaged that several of its methodological and utility aspects could be applicable to other types of sample-based fishery surveys, particularly in cases where large-scale data collection programmes operate under financial and personnel constraints. Emphasis is placed on "safety in sampling" and some simple approaches are presented by

means of which statistical indicators regarding sampling accuracy are formulated in advance.

Methodological aspects and statistical indicators that relate to the accuracy and reliability of estimates are presented in handbook form. They summarize experience gained over the recent years in fishery statistical development by the Fishery Information, Data and Statistics Unit (FIDI) of the FAO. The concepts and methods included in the paper apply equally to both marine and inland capture fisheries and are presented in a manner that is generic enough to make them adaptable in commonly used data collection systems.

Readers interested in a more in-depth discussion on statistical and computing approaches, may make use of the list of references that is given at the end of the handbook.

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### **ABSTRACT**

The presented methodological notes address the question of sampling accuracy when sample-based data collection operations are performed under operational constraints, a frequent concern of fishery administrations with limited budget and human resources. Such a question is directly related to the frequency and extent of field operations for data collection. The paper focuses on an *a priori* determination of safe sample size using classical statistical methods appropriately adjusted to respond to specific target populations. The concepts and methods included in the paper apply equally to both marine and inland capture fisheries and are presented in a manner that is generic enough to make them adaptable in commonly used data collection systems.



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