

1 OBJECTIVES

1.1 At-sea fishery observer programmes

Observers can collect information on fishing vessels or at landing places, processing plants or market places. They are essentially one of the primary interfaces between fisheries and authorities. These guidelines focus on the work of at-sea observers and the programmes that support them, but the principles and practices would apply to other observer programme types.

At-sea fishery observers work on fishing vessels during normal fishing operations. Observer programmes can be small and simple, using a few observers which join fishing vessels on day trips, two or three times a month, and produce simple raw data sheets. Or they can be large and complex, involving many highly trained observers collecting, processing and analysing data and sending the results via satellite to a shore-based team of experts, who further analyse results before sending them to a fisheries management authority.

There is a common myth that observers need high-level qualifications and 'high-tech' equipment. From what follows in these Guidelines it can be readily seen that this is not the case. The demands on observers and equipment relate to the type of fisheries management system in use. For example, a fishery that demands real-time information in order to determine closure times may require more advanced skills and technology than a fishery managed by simply controlling access.

Small and simple observer programmes working with a few suitably trained people can produce substantial information especially in new or developing or smaller fisheries. If this information is optimally utilised by the fishery management authority, the impact on resource management can be very significant.

1.2 Objectives of an observer programme

Observer programmes are usually implemented in order to generate data for both *fishery science* and *compliance* purposes, which in turn serve wider *fisheries management* objectives.

1. **Fisheries science.** This generally involves the estimation of total catch and effort, including by-catch, discards and high-grading; biological sampling of catches (e.g. spawning condition, fish size, disease rates, shell condition, etc); and measurement of environmental parameters.
2. **Vessel compliance.** Observers can register compliance with fisheries management laws, regulations and plans; record catch composition, prohibited species, by-catch, size limits, discarding, area and gear restrictions; validate vessel logbooks and the labelling of processed fish.
3. Both scientific and compliance types of data are needed for effective **fisheries management**. For example, they are key to determinations of: the opening and closing of a fishery; production estimation; fishing plan development; marine protected areas and species; condition of caught and released species; marketable and non-marketable catch; conversion factors; improved communication with fishers; determining effectiveness of various gears; and estimates of pollution levels. Observers can also play a wider management role by providing information related to straddling or highly migratory stocks, and to implementation of regional or international fishery obligations.

Each observer programme will develop a balance between fishery science and compliance aims, in accordance with management priorities and the constraints of the programme environment. The setting of priorities and the evaluation of the programme constraints will ideally be determined when management plans are developed or updated. But if no management priorities are available, for example in a new fishery or where data are very limited, they can also be assessed at the time of developing an observer programme (Chapter 6).²

Small and simple observer programmes working with a few suitably trained people can produce substantial information for the fishery management authority, especially in a developing or smaller fishery.

Observers can make primary observations and records of exactly what is being caught, where, when and how.

² For further reading see Bergh and Davies (2001), Smith (1999) and FAO (1997).

Fishery observers can contribute to fishery science and compliance aims, and therefore to wider management objectives.

1.3 Activities of an observer programme

The main advantage of at-sea observers is that they can provide geo-referenced catch-by-catch data directly from monitoring routine fishing activities. Locating this data in space and time may be important and it will be lost once the catch has been sorted, processed or stored before bringing ashore.

An outline of the main tasks of observers is given in Table 2 with links to the science and compliance objectives that they can contribute towards. This list is not

exhaustive and depending on the management plan the links may vary. The rightmost column makes a simple comparison with other monitoring means.

Observer tasks can contribute to one or both objectives (?). Certain activities can only be achieved by at-sea observers (x). Others tasks are best and most completely achieved by observers, but a degree of cover can be achieved by alternative schemes, sensors or platforms (often not geo-referenced) (✓). Some are achieved equally well by other monitoring systems or methods (◆).

Table 2 The relationship between at-sea observer tasks and objectives

| Observer Tasks | Contributing to objectives | | | Ability unique to at-sea observers |
|-----------------------------------------|----------------------------|-------------------|----------------------------------|------------------------------------|
| | Fisheries science | Vessel compliance | Fisheries management information | |
| Fishing Activity | | | | |
| Logbook validation | • | • | • | ✓ |
| Effort monitoring | • | | • | ✓ |
| Position monitoring | | • | • | ◆ |
| Gear identification (inc. illegal gear) | • | • | • | ✓ |
| Target species catch monitoring | • | • | • | x |
| Non-target species catch composition | • | • | • | x |
| Prohibited species catches | | • | • | x |
| Incidental catches | | • | • | x |
| Fishing plan development | | | • | ✓ |
| Gear selectivity | • | | • | ◆ |
| Fleet activity | | | | |
| Fleet dynamics | • | | • | ◆ |
| Detection of unlicensed vessels | | • | • | ◆ |
| Production | | | | |
| High Grading | • | • | • | x |
| Discard levels | • | • | • | x |
| Marketable and non-marketable catch | | | • | x |
| Conversion factors | • | | • | ◆ |
| Box and container labelling | | • | | x |
| Biological sampling of catch | | | | |
| Size measurements | • | • | • | ✓ |
| Sex determination | • | | | ✓ |
| Spawning condition | • | | • | ✓ |
| Disease monitoring | | | • | ✓ |
| Shell condition | • | | • | ✓ |
| Environmental sampling | | | | |
| Sea state | • | | | ◆ |
| Cloud cover | • | | | ◆ |
| Sea temperature | • | | | ◆ |
| Ambient temperature | • | | | ◆ |
| Pollution | | | | |
| Dumping of pollutants | | • | • | ✓ |
| Transshipment activity | | • | • | ✓ |
| General | | | | |
| National sovereignty | | | • | ◆ |
| Avoidance of submerged items | | • | • | ◆ |

Key:

- Observer task that can contribute to objectives
- x - Activities that can only be done by observers
- ✓ - Activities best achieved by observers but a degree of cover can be achieved by other means
- ◆ - Activities can be achieved equally well by other means

1.4 The integrated approach

Fishery observers can play an important role in an integrated system of fisheries management as primary (source) and secondary (validation) information providers. As indicated in Table 2 observers are able to provide certain information that observers can gather only at-sea. (It may be possible for vessel crew to collect these data types but due to the concern over bias their use would be very limited.) What data are feasible for an observer programme to collect should contribute to the original design decisions on management (control) measures.

It may also be the case that an observer programme is already running before any management measures are in place. If so, then observer programmes will often provide valuable information to assist in the development and later implementation of future management measures and management plans.

Observers alone will not provide all the information required for management of a fishery. Ideally they will function as part of a wider system including perhaps logbooks, landing place monitoring, satellite monitoring through Vessel Monitoring Systems (VMS), research cruises and inspections of vessels. Although the relevance, role and emphasis of observer programmes will vary in different fisheries and also over time, even with the recent proliferation of satellite monitoring solutions, the demand for observer programmes remains high.

1.5 International instruments and guidelines

Several key international instruments call for the use of observer programmes as important fisheries management tools at both local and global levels.

- Article 62 of the United Nations Convention on the Law of the Sea (UNCLOS)³ - the requirement is made for coastal states to conduct research in their Exclusive Economic Zone (EEZ) and permits them to place observers on board research vessels.

³ United Nations Convention on the Law of the Sea (UNCLOS).

- The FAO Code of Conduct for Responsible Fisheries (CCRF)⁴ - supports the appropriate use of observer programmes to ensure effective monitoring, control and surveillance (MCS), law enforcement, reporting of information as required for scientific assessment and catch reporting. The CCRF also encourages states to assign priority to data collection in order to improve the knowledge of the fisheries. Boxes 1 and 2 give examples.

Box 1

CCRF Section 7.7.3 sets out that:
“States, in conformity with their national laws, should implement effective fisheries monitoring, control and surveillance and law enforcement measures including, where appropriate, **observer programmes**, inspection schemes and vessel monitoring systems. Such measures should be promoted and, where appropriate, implemented by subregional or regional fisheries management organizations and arrangements in accordance with procedures agreed by such organizations or arrangements.”

- Article 18 of the UN Fish stocks Agreement (UNFSA)⁵ - provides for measures to be taken by a flag state that include requirements for recording and timely reporting of vessel position, catch of target and non-target species, fishing effort and other relevant fisheries data through such means as the implementation of national, subregional and regional observer programmes. In UNFSA, Annex 1, Article 6, observer programmes are advocated as a suitable means to verify fishery data in sub-regional or regional fishery management organizations.

⁴ FAO. Code of Conduct for Responsible Fisheries. Rome, FAO. 1995. 41p.

⁵ Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 Relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks.

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Box 2

CCRF, Section 8.4.3 sets out that “States should make every effort to ensure that documentation with regard to fishing operations, retained catch of fish and non-fish species and, as regards discards, the information required for stock assessment as decided by relevant management bodies, is collected and forwarded systematically to those bodies. States should, as far as possible, establish programmes, such as observer and inspection schemes, in order to promote compliance with applicable measures.”

- The precautionary approach to fisheries⁶ requires that information be collected from a variety of sources and that monitoring systems should have flexibility to ensure for prompt action by the redeployment of monitoring resources, if required.
- The international plan of action (IPOA) to prevent, deter and eliminate Illegal, Unreported and Unregulated fishing⁷ was adopted by the Committee on Fisheries (COFI) in March 2001. Under section 24.4, on Monitoring, Control and Surveillance (MCS), states are encouraged to implement, where appropriate, observer programmes in accordance with relevant national, regional or international standards.
- Observer programmes are thus considered at the highest level to be of great importance to fisheries management. They are both supported through international instruments and support the demands for information contained in these instruments.



Fishing vessels can be rough and uncomfortable – observers need to work and live in these conditions, sometimes for months on end (S.L. Davies).

⁶ Precautionary approach to Fisheries, Part 1: Guidelines on the precautionary approach to capture fisheries and species introductions, FAO (1995).

⁷ IPOA-IUU was approved by FAO Council in 2001.

1.6 Application of observer programmes in developing countries

At-sea observer programmes are well suited to meet many of the difficulties faced by developing countries. They offer a practical and feasible option for fishery information gathering for governments and fisheries management authorities. The UNFSA recommends support to developing countries, as indicated in Box 3.

Box 3

UNFSA (Article 25, 3(c)) stipulates that assistance for developing countries should be directed towards

“..monitoring, control, surveillance, compliance and enforcement, including training and capacity-building at the local level, development and funding of national and regional observer programmes and access to technology and equipment.”

Many political, social and economic considerations may be of high importance in developing countries during the initial stages of designing the management scheme for a fishery. In these circumstances observer programmes can often offer advantages in terms of:

- their flexibility in relation to size, (programmes can be large or small and can certainly expand once their success is evaluated);
- employment opportunities for local people with basic education and good health;
- empowerment of unskilled people through vocational training;
- providing baseline information for compliance control and scientific monitoring of a fishery (especially relevant for a new fishery);
- not relying heavily on high technological hardware or skills;
- their interest to donor organizations that have compatible objectives;
- reasonable cost; and
- relatively short start-up periods.



Tropical fisheries offer a challenge in species identification due to the large variety of fish in each fishery (P.E. Bergh).

1.7 The rationale, purpose and structure of these guidelines

The need for observer programmes on national, sub-regional and regional levels have been highlighted in recent international initiatives to promote responsible fisheries (Section 1.5). This has created an interest, especially in developing countries, to develop improved frameworks and options for observer programmes.

These Guidelines offer practical advice to assist fisheries management authorities, especially in developing countries, in knowing what is involved in an at-sea observer programme (Figure 1) and in deciding on the right option for a given situation. Definitions of

terms commonly used in the following chapters are shown in Box 4.

Box 4

Definitions

*In the rest of these guidelines when **fishery observer programme**, **observer programme** or **programme** are used they all refer to an **at-sea fishery observer programme**; **fish** refers to all **marine species** that fishery observers may sample; and **observer** refers to an **at-sea fishery observer***

Figure 1 Elements of an at-sea fishery observer programme and related guideline chapters

