

*Safety in small-scale fisheries*

**SAFETY IN SMALL-SCALE FISHERIES: WHAT IS TO BE DONE?**

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**ABSTRACT**

Marine fishing is the most dangerous of all civilian occupations. Safety in small boats ranges from unsatisfactory to miserable. Some 15-20 million small-scale and artisanal fishermen worldwide fish under conditions for which their boats as well as safety, survival, communication, and first-aid equipment are inadequate, and search-and-rescue (SAR) and early warning services nominal or non-existent. There's general lack of realistic legislation, enforcement, training of fishermen and trainers, technical support, prevention and warning systems and professional requirements. Action is needed on international and national scales aimed at: (1) accident prevention; (2) reducing human and material casualties of accidents.

Enforceable safety measures must be regulated/legislated with fishing people's participation. International technical co-operation is needed for training schemes, manuals publication, design of safer fishing craft, and coastal flood-and-storm shelters. In some countries, naval and air forces can participate in weather warnings and SAR activities. Fishery management and insurance schemes should consider safety-related ramifications, while minimizing/eliminating any incentives for risk-taking. Safety, survival, first aid, and communication equipment should not be taxed, and safety-related prestige and material prizes should be awarded. Fisherfolk-based SAR schemes should be encouraged and supported, and rescue teams organized, trained, and equipped. Beacons should be erected on shore, and anchored at sea, and fishing boats be equipped with radar reflectors and other collision preventing means. Boat-beaching facilities should be designed and installed where beaching through surf is dangerous.

Modes of international co-operation, and ways to adaptation of rules and mandatory equipment to local socio-economic, cultural, and environmental conditions are discussed, a plan of action outlined, and technical recommendations provided.

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# **SAFETY IN SMALL-SCALE FISHERIES: WHAT IS TO BE DONE?**

(Abridged version)

## **1. INTRODUCTION**

Marine fishing has always been the most dangerous of all civilian occupations (Ben-Yami, 1998). Fishworkers frequently operate under hostile conditions, often using imperfect vessels and technology. Small-scale fisheries are particularly vulnerable (Ben-Yami, 2000; Holliday, 2000).

Casualties are high in countries and areas where small-scale fishworkers operate under conditions for which their vessels, safety and communication equipment, first-aid, search-and-rescue (SAR), and early warning services are less than adequate (Gallene, 1995&1997; Johnson and Tore, 1994; Satia, 1993). These people fish and collect aquatic organisms by swimming, diving, wading, or using small-scale fishing craft. Such craft are defined as mainly decked boats of less than 10-12-m length overall, and less than 12-15 MT displacement, powered by engines not exceeding 200-300 hp (150-225 kW), as well as rafts, canoes, pirogues, and open-deck dhows up to 16 m length overall, powered by engines not exceeding 200 hp (150 kW) (Ben-Yami, 1988).

Safety problems of small-scale fisherfolk have been so far receiving low priority even in many industrial nations, and all but neglected in most of the others (Ben-Yami, 1998, 1999&1999a; Wagner, 1999). Reduction of casualties can be achieved through concerted action of fisherfolk communities and organizations, national and sub-national authorities, international organizations, and voluntary bodies.

Sections 4 and on of this paper have been severely abridged, some into a form of headlines. Unabridged version will be made available by FAO/FIIT. The BIBLIOGRAPHY is pertinent to the latter version.

## **2. INTERNATIONAL INITIATIVE – PLAN OF ACTION**

FAO, ILO, IMO, and WHO are the main inter-governmental bodies professionally qualified to deal with problems of safety and health of fishworkers on the world scale. However, FAO's has decades of experience and involvement in the various aspects of development and management in fishing communities, including boat design and construction, and fisherfolk's safety. It appears, therefore, that FAO should assume the leading role in international and inter-governmental activities in small-scale and artisanal fisheries safety issues, particularly in developing countries. Institutional-administrative feasibility represents another reason for centralizing such programme under the umbrella of a single international organization. Nonetheless, with respect to some aspects of seamanship, such as certification, and international and national

safety codes, standards, insurance, and legislation, IMO and ILO ought to be consulted and should extend their assistance (IMO 1998; Wagner, 1999).

Internationally supported programme, sponsored by inter-governmental regional and worldwide organizations would carry the necessary weight to negotiate with governments, to deal with political "anti-regulation" pressures, and with official opposition based on implementation difficulties.

Such international endeavour may assume various forms. Here, the following option is proposed.

### **2.1 Working Group**

FAO would formulate a world programme for safety in small-scale fisheries. A full-time Chairman (or a Group Secretary) will be appointed to coordinate a specially established Working Group. Among its first tasks would be identification of financial sponsorships, and approach to all governments to carry out surveys of the state of safety in their small-scale fisheries. In Third World countries, NGOs and FAO field projects might assist. Since NGOs are playing important roles in many developing countries, especially where it comes to community-related work, the integrated joint programme should allow for drawing in NGOs wherever they are willing and able to help, while those of them that provide substantial input into the programme ought to be represented on the programme's Working Group.

An important stage of the programme would be a world-wide convention on safety-at-sea for small-scale and artisanal fisheries that would provide guidance and legal background to member countries.

### **2.2 Survey of warning systems; SAR**

The Working Group would review the existing warning systems and SAR services throughout the world's small-scale fisheries. FAO has already accumulated some related information and experience (Gallene, 1995&1997; Houehou, 1993; Johnson and Toure. 1994). With respect to reviewing warning systems, regional international co-operation should be encouraged and, if necessary, coordinated by the Working Group. Regional storm warning systems should be looked at from two points of view: forecasting and monitoring, and broadcasting. The next step should be to seek, promote, and support solutions.

### **2.3 Training in accident prevention, behaviour in emergencies, and survival at sea.**

The Working Group would review the level of training and know-how in areas with high casualty record, and initiate and promote training activities as those described

below. Again, where governments are unable or unwilling to take proper care of these aspects, the programme should seek international and NGOs' support.

### **3. TWO STRATEGIC OPTIONS**

Because the safety situation in small-scale fisheries worldwide is so bad, even modest improvements would result in substantial reduction of the casualties' rate. Two basic strategies are possible: (1) accident prevention; (2) reducing human and material casualties resulting of accidents. Depending on specific, local condition, both strategies can be applied separately, consecutively, or simultaneously.

The first strategy encompasses improvements in boats' design and construction, particularly stability, weather warning systems, storm shelters for vulnerable coastal populations, and compulsory training and licensing of skippers and crews in safety of both, navigation and on-board procedures. Additional aspects consist in integrating safety issues in fishery management and eco-labelling schemes, reduction and, where feasible, reduction and elimination of financial and fishery management-induced incentives to take risks, as well as in legislation and insurance that stipulate safety measures.

The second strategy involves SAR, safety, first aid, and survival equipment on board, emergency communication and tele-location systems and skipper and crew knowhow and performance in emergencies, and the related training.

### **4. PREVENTION AND TRAINING**

#### **4.1 Reduction of incentives to take risks**

##### **4.1.1 In managed fisheries**

- (i) Set the days for short-opening fisheries as to avoid days of particularly bad weather.
- (ii) Cut out periods of bad weather when applying seasonal or other short closures.
- (iii) Apply mandatory closures at times of bad weather for fisheries supported by boats of comparable seaworthiness.
- (iv) Introduce mandatory insurance stipulating seaworthiness tests and equipment inspections as a condition for the allocation of fishing licenses, quotas, and other fishing rights.

##### **4.1.2 Legislation**

- (i) Safety-at-sea associated laws and rules should deal with mandatory equipment made by law tax and duty-free, seaworthiness of fishing craft, crew and skipper certification, and inspections.
- (ii) Promote legislation and enforcement of rules preventing inhuman and unjust treatment of artisanal crews employed with their craft by "motherships".
- (iii) See 4.1.1 (iv), above.

## **4.2. Training and certification**

### **4.2.1 Certification**

Fisherman in charge of fishing craft carrying at least one additional crewmember should be certified.

Initially, experienced “old-hands” can be excepted. Syllabi for certificates should fit local conditions, sort and size of boat, range, and educational level, and comprise local navigational methods, the rule of the road, basic first-aid knowledge, and behaviour in and management of emergencies.

### **4.2.2 Training and publications**

Training courses, crash-courses, workshops, seminars, etc. in 2 main categories:

- 1 – training of trainers and educators;
- 2 – training of fisherfolk.

Educational efforts may be needed where, e.g., fisherfolk do not trust modern weather forecasting. Governments should be encouraged to organize courses and workshops, and where needed, itinerant training units, (Ben-Yami, 1999; McCoy, 1991).

#### **4.2.2.1 Training trainers**

Training trainers, themselves desirably experienced seamen or fishermen, especially for training in survival, and emergency management, and use of safety equipment. Other training activities in this category:

- (i) extension workers for voluntary SAR groups;
- (ii) first-aid paramedics;
- (iii) mechanics-instructors;
- (iii) boat building instructors;
- (iv) instructors in emergency use of sails
- (v) train staff of first-aid units to recognize symptoms of decompression sickness, and realize the must of speedy transportation of the casualty to a re-compression chamber (Berkow et al, 1997).

Training programmes should involve teaching behaviour in and management of marine accidents involving stability, overloading, and "top-heavy" situations, including capsizals, handling of holes and leakages. Training, education, and examinations (Rayment and Fossi, 1994), should cover survival at sea, handling boats in currents, rough weather, tall waves, surf, over shallows, and in presence of water spouts, "man overboard" and "abandon ship" routines, grounding of a boat , and ways to refloat it before major damage occurs, as well as Rule of the Road and recognition and avoidance of collision course, and precautionary behaviour and procedures on board in worsening weather (Gulbrandsen, 1998). Training and even certification of SCUBA divers is another critical issue.

#### **4.2.2.2 Training fishworkers**

Curricula should be prepared, and instructors selected according to specific, local needs. These would include:

- (i) "abandon ship" practice;
- (ii) rapid donning of immersion suits;
- (iii) first aid, including recognizing symptoms of, and dealing with hypothermia;
- (iv) survival in water in the presence of sharks.

#### **4.2.2.3. Publications**

- (i) Produce easy-to-use, waterproof and small-size maps charting dangerous spots and areas, and safe routes.
- (ii) Prepare popular, well-illustrated "Pop"-style and pocket guides/manuals on accidents prevention and safety at sea for artisanal fisheries, translated into relevant languages and distributed to governments and programmes dealing with safety at sea. (FAO/ILO/IMO, 1988; Gulbrandsen and Pajot, 1993; Marine Safety Agency et al., 2000; Safety Committee, 1972; Safety Liaison Working Group, 1997). Guidance how to react to accidents and management of emergencies should be included in new or reprinted manuals.
- (iii) produce or reproduce and distribute a series of guides aimed at boatbuilders without formal training in the construction of seaworthy and reliable small-scale fishing craft. (Coackley, 1991; Fyson, 1980, 1985; Mutton, 1982; Gulbrandsen, 1992; Gulbrandsen and Pajot, 1993; IMCO, 1976 a&b; Reinhart, 1975; Riley and Turner, 1995; J.Turner; K.Codel, priv.comm.).

### **4.3 Boat design and construction.**

#### **International design and construction standards for small-scale fishing craft**

A team of experts will identify and formulate of international and regional standards for small-scale fishing craft design and construction that can be used as a basis for regulation and enforcement. The standards must fit fishing, environmental, socio-economic and cultural conditions, as well as general technological level and infrastructure in different parts of the world, and recommend existing and new designs, which would be safer, and provide better working and living conditions on board, more efficient fishing operation, including fuel economy.

#### **4.3.1 Artisanal boats**

Improvements can be introduced to traditional craft while maintaining its character, such as (Ben-Yami, 1999; Gulbrandsen, 1992):

- (i) buoyancy on capsized or flooding;
- (ii) possibility to right the boat up by swimming crew;

- (I) plastic-foam buoyancy blocks fitted in appropriate spaces;
- (ii) small improvements, such as, e.g., use of bolts, instead of nails, and other materials, and use of better tools;
- (iii) improvements of watertight integrity, freeboard, stability, performance in waves and in surf, etc.

#### **4.3.2 Stability**

The special conditions of operation of fishing vessels, especially, double-rigged trawling boats and small-scale purse seiners require special consideration of stability, due to external pulls. (Coackley, 1991; Fyson, 1980, 1985; Gulbrandsen and Pajot, 1993; Mutton, 1982; Riley and Turner, 1995).

Where necessary, provide "weak-link" elements in the rigging or the fishing gear that would break off when pulls raise to dangerous levels (Ben-Yami, 1999).

#### **4.4 Stings, venoms, and poisons**

Fishing people are prone to painful and even fatal injuries by venomous and poisonous marine animals. The Working Group should promote:

- (i) improving the availability of antivenoms and related medicines to fisherfolk, especially in Third World fisheries;
- (ii) research and development of antivenoms and immunization against venoms, and poisons such as ciguatera, and of simple ciguatera presence tests (Berkow et al., 1997; Williamson et al., 1996).

#### **4.5 Weather warnings**

The Working Group will promote re-orientation of weather warning systems to serve small-scale fisheries.

##### **4.5.1 Delivery of warnings: radio**

- (i) Promote obligating public and private radio stations, in areas prone to major storms and sudden weather changes, to transmit weather warnings as soon as received, without waiting for the regular weather forecast. Such procedure, where necessary, should be made compulsory by law.
- (ii) require all sea-going, even artisanal fishermen, to carry radio receivers able to receive such weather broadcasts. (Anon. 1996, Calvert, 1998).

##### **4.5.2 Delivery of warnings: military forces**

Promote the use of military aircraft to alert fisherfolk at sea, on land close to shore, and on the beaches, on approach of dangerous weather.

#### **4.6 Fire prevention**

The Working Group should promote relevant regulation, including, e.g.:

- (i) small craft powered by petrol-driven outboard motors should carry all their fuel in extra original outboard-motor fuel tanks;
- (ii) small open boats to carry a bucket, and some sand in a container.
- (iii) larger, decked small-scale fishing vessels must be designed with special consideration of water pumping systems, galleys, engine room and casing, and exhaust pipes, to minimize the risk of fire.

#### **4.7 Preventing collisions**

- (i) all boats should carry simple radar reflectors and expose light during nighttime;
- (ii) notwithstanding any electronics, a person must be on lookout whenever the boat is in motion;
- (iii) give emphasis to good knowledge of "Rule of the Road" and discerning collision course.

#### **4.8 Preventing beaching accidents**

- (i) promote locally appropriate beaching installations and services;
- (ii) promote erection on land and anchoring at sea of beacons, light and other beacons.

#### **4.9 On the beach: disaster preparedness; evacuation and protection**

Where groups of fisherfolk are engaged in beach fishing activities, promote introduction of visual warning means, including flags hoisting, smoke signals, pyrotechnics etc., and warning from the air, and carrying radio transistors.

where hurricane-force winds destroy dwellings and carry in their wake torrential rains and floods, promote construction of safe storm refuges, such as, for example, well constructed (e.g., reinforced concrete) houses, especially, schools, houses of worship, community centres, etc., with where necessary, raised flooring. One possibility is to construct low-cost community "survival platforms". These may consist of a concrete, well fenced floor set on a sufficient number of concrete pillars tall enough to keep the platform above any possible flood, with a minimum carrying strength of at least 300-400 kg/sq.m, and wide gangways and stairs. Such structures can save large numbers of people and, even, animals, while requiring minimum maintenance. (Ben-Yami, 1999; J.Turner, priv.comm.).

### **5. MANAGEMENT OF ACCIDENTS AND EMERGENCIES AT SEA**

The existing guides and manuals do not adequately deal with many of the issues concerned, particularly when accidents associated with fishing operations are concerned. Some examples follow.

## **5.1 Survival and fire fighting equipment**

- (i) All fishing craft designed to remain buoyant upon capsizing should be fitted with handropes or other means by which people in water can hold to with ease, and right the craft up.
- (i) every boat should carry: hooks and line for emergency fishing, some sort of signal pyrotechnics, desirably parachute flares, a transistor radio receiver, an electric torch with spare batteries, where feasible - a cellular telephone, a buoyant waterproof container for the above, lifejackets fitted with reflective tapes or active lighting system for all persons on board, a basic first-aid set, buoyant emergency water containers, anchor and anchor rope, a bucket or two.
- (ii) All small boats should carry paddles or oars, a mast and sail, and a lamp.
- (iii) magnetic compass should be carried in all boats fishing at a distance exceeding 1-2 NM offshore (Gulbrandsen, 1992&1998; Gulbrandsen and Pajot, 1993).
- (iv) Decked small-scale vessels larger than 7-8 m length should be equipped with standard navigation lights, hand and mechanical bilge pumps, fire extinguishers, and carry additional equipment, such as a small liferaft (if boat not buoyant), light and smoke signals, etc., a light-buoy with radar reflector.
- (v) EPIRB buoys are desirable and, where economically feasible, obligatory
- (vi) in cold water areas, personal survival suits.

## **5.2 Emergencies**

### **5.2.1 Survival in water.**

All survival equipment should be well stowed and maintained and in case of sinking, easily or self-detachable and stay afloat. All boats should carry sufficient number of life jackets, and if necessary, assisted in their acquisition and distribution.

### **5.2.3 During fishing operations**

Injuries are caused from contact with winches and line and net-haulers, running gear (cables, wires, nets, and longlines being set and hauled), fish hooks, and heavy weights overhead, as well as with thrashing and dead fish.

- (i) Keep first aid at hand at any time;
- (ii) discontinue fishing ceased when external medical assistance is urgently needed;
- (iii) keep sharp knife, axe, and/or other cutting devices ready where a person may get caught by running lines, ropes, or cables.

### **5.2.4 Diving and otherwise fishing in water**

- (i) Provide emergency re-compression chambers where large number of fishing people is employed in commercial SCUBA diving;
- (ii) ban SCUBA fishing in deep water where safety means are insufficient.

### **5.2.5 Bad weather**

Sudden gales, major storms and heavy fog frequently cause small boat capsizals, grounding, losing way, and collisions, as well as casualties. Successful weathering of a storm requires thorough preparation of the boat, first, in the harbour, and again when the weather starts to deteriorate. See that the deck is tight, all hatches shut and secured, and all weights, containers, and fishing and other equipment safely lashed down. Stretch manropes where people must move, e.g., between forecastle, engine hatch, and the wheelhouse.

Rules useful especially for decked boats in the 8-12-m l.o.a. range, follow.

- Follow stability rules;
- Don't overload with excessive equipment or catch;
- Mind stability when making changes to your vessel or equipment;
- Make sure all hatches, weatherdeck and watertight openings are in good condition with gaskets;
- Keep bilges free of excess water;
- Frequently check all void spaces for water;
- Ensure that bilge-pumping system is operational (U.S.Coast Guard guidance).

To maintain boat's bow into the weather, keep on board sea-anchor (can be replaced by wise use of fishing gear, especially, trawls), and a small gaff sail (trysail) that can be set over the boat's stern.

### **5.2.6 Injuries inflicted by stingy, venomous, and poisonous marine animals**

(i) provide mobile first-aid units, where wading, swimming, and diving fishing activities are frequent. (Berkow et al., 1997; Williamson et al., 1996.).

(ii) promote regulations and recommendations related to minimum first-aid means and drugs against venoms and poisoning to be carried by such units and on board small fishing craft.

## **5.3 Search-and-Rescue (SAR) services and small-scale fisheries**

Wherever necessary, the Working Group would promote strengthening or establishment of SAR services.

### **5.3.1 SAR - State of the art**

Most if not all coastal industrial countries have SAR services. In such countries, small-scale fisheries should reach the level of training and equipment comparable to that practiced in the larger-scale fishing fleets, as, for example, introduction of real time vessel monitoring system (VMS), automatic emergency and position calls from vessels in danger, and wider use of EPIRB.

Three basic types of SAR services are relevant to small-scale fisheries:

- a** - civilian-voluntary;
- b** - state-run: naval, air force, coast guard, and police;
- c** - community self-help SAR groups.

Fishworkers in trouble are mostly found and rescued by their fellows. Therefore, visual or other contact among small fishing boats is important.

### **5.3.2 Fisherfolk sea and storm safety action groups**

In most Third World countries, SAR services of any kind are less effective, if in existence at all.

Where governments are not effective, the way to go is to identify local, including traditional institutions and leadership, and help them to organize their own SAR and other related activities. They may construct and install simple radar reflectors on canoes and sailing rafts, and/or equip them with radar-reflector buoys, beacons marking dangerous reefs and rocks, lights or fires on beaches and at shelter entries to mark night passage of fishing craft through surf or narrow passages, beacons, if necessary in pairs, to mark safe access course, install and operate beaching installations, etc. Local groups can also handle simple weather-warning systems, such as using mosques' loud speakers, hoisting warning flags, generating smoke signals, etc., to alert the fisherfolk working inshore.

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## **BIBLIOGRAPHY (Publications referred to in the unabridged version)**

Anon. 1996. Were they warned in time? *World Fishing*, 1996(12):3.

Bates, Q. 1999. Anger at inshore code. *World Fishing*, 48(2):20-21.

Ben-Yami, M. 1988. The role of small-scale fishing gear and techniques in development: challenges towards the year 2000. *Proc. World Symposium on Fishing Gear and Vessel Design* (Marine Institute, St. John's, Newfoundland, Canada). P.449-453.

- Ben-Yami, M. 1998. The dangerous profession. *World Fishing*, 1998(12):6.
- Ben-Yami, M. 1999. Risk and Dangers in Small-Scale Fisheries – an overview. Working Paper of the Sectoral Activities Programme, International Labour Office, Geneva.
- Ben-Yami, M. 1999a. Safety at sea: the tragedy of official default. *Samudra*, 1999(9):24-28.
- Ben-Yami, M. 2000. There are no excuses for orphan's tears. *World Fishing*, 2000(3):10.
- Berkow, R. et al. (Editors). 1997. *The Merck Manual of Medical Information*. (Merck Research Laboratories, P.O.Box 4, West Point, PA, USA). 1510 pp.
- Calvert, P. 1996. Safety at sea: An attitude of mind not an externally enforced set of rules. Lecture at One-Day Workshop of the Kerala Fisheries Society on Safety at Sea. Mimeo. 11 pp.
- Calvert, P. 1998. Cyclone warning. *Samudra*,(21):10-12.
- Coackley, N. 1991. Fishing Boat Construction: 2. Building a fiberglass fishing boat. *FAO Fish.Tech.Pap.*(321):84 pp. (FAO, Rome).
- FAO/ILO/IMO, 1988. Document for Guidance on Fishermen's Training and Certification: an international maritime training guide. IMO, London, 1988
- Fyson, J.F. 1980. Small Trawlers. Fishing Boat Designs: 3. *FAO Fish.Tech.Pap.*(229). (FAO, Rome). 52 pp.
- Fyson, J.F. (Ed.) 1985. *Design of Small Fishing Vessels*. (Fishing News Books, Oxford, U.K.). 320 pp.
- Gallene, J. 1995. Data Compendium on Safety at Sea for seven West African Countries; Mauritania, Senegal, The Gambia, Guinea-Bissau, Guinea, Sierra Leone, and Cape Verde, 1991-1994. *IDAF/WP/71Techn.Rep.*(71):13 pp. (IDAF/FAO Cotonou, Benin).

- Gallene, J. 1997. Data Compendium on Safety at Sea for six Central African Countries; Cameroon, Gabon, Congo, Sao-Tome & Principe, Democratic Republic of Congo, Angola, 1991-1996. IDAF/WP/.116 Techn.Rep.(116):16. (IDAF/FAO, Cotonou, Benin).
- Gulbrandsen, J. 1998. Training in sea safety development. TCP/IND/6712 Field Doc.(4):10 p. (FAO, Bangkok).
- Gulbrandsen, O. 1992. Safety in small fishing boats. Infofish Internatl., 1992(1):44-46.
- Gulbrandsen, O. and G.Pajot. 1993. A Safety Guide for Small Offshore Fishing Boats. BOBP/MAG/16. (Bay of Bengal Programme, India). 34 pp.
- Holliday, E. 2000. Act on my plan to cut death rates. Fish.News Internatl., 2000(1)16.
- Houehou, F. 1993. Strengthening safety at sea. IDAF Newsl. (FAO), (19):18-21.
- International Maritime Organization (IMO). 1998. Revision of the Fishing Vessel Safety Code and Voluntary Guidelines. U.S.A. and Russian Federation submissions. (Sub-Committee on Stability and Load Lines and on Fishing Vessel Safety).
- Inter-Governmental Maritime Consultative Organization (IMCO). 1976a. Code of Safety for Fishermen and Fishing Vessels - Part A: Safety and health practice for skippers and crews. (FAO/ILO/IMCO, London/Rome). 108 pp.
- Inter-Governmental Maritime Consultative Organization (IMCO). 1976b. Code of Safety for Fishermen and Fishing Vessels - Part B: Safety and health requirements for the construction and equipment of fishing vessels. (FAO/ILO/IMCO, London/Rome). 158 pp.
- Johnson, J.P. and J.A.Toure. 1994. Accidental death and destruction in artisanal canoes. IDAF Techn.Rep. (59):21 pp. (DANIDA/FAO, Cotonou, Benin).
- Marine Safety Agency et al. 2000. Emergency Procedures for Fishing Vessels. (MSA, Southampton, U.K.). 13 p.

- McCoy, M.A. 1991. Survey of Safety at Sea Issues in Pacific Island Artisanal Fisheries. Field Doc.91/3 (FAO/UNDP Regional Fishery Support Progr., Suva, Fiji). 84 pp.
- Ministry of Fishery and Marine Transport. 1994. Draft Code of Conduct (Dakar, Senegal). (From Rayment and Fossi, 1994).
- Ministry of Transport, Shipping and Ports Administration, Small Vessel Division. 1999. Small Vessels - Standard for Safety, Emergency, and Rescue Equipment. (Govt.Publ., Haifa).
- Mutton, B. 1982. Hauling Devices for Small Fishing Craft. Engineering Applications: 2. FAO Fish.Tech.Pap.(229). (FAO, Rome). 146 pp.
- Rayment, P. and A. Fossi. 1994. Report into the safety and security of the artisanal fishermen of Senegal. (Sea Safety Group U.K./CCFD, France. Brea, Cornw. U.K.). 62 pp.
- Reinhart, J.M. (Ed.). 1975. Small Boat Design. Proc. ICLARM Conf. Small Boat Design, Noumea, Oct.27-28, 1975. (ICLARM, Manila, Philippines). 77 pp.
- Riley, R.O.N. and J.M.M. Turner. 1995. Fishing Boat Construction: 3. Building a ferrocement fishing boat. FAO Fish.Tech.Pap. (354):149 pp. (FAO, Rome).
- Safety Committee. 1972. Fishermen's Safety Manual. (Fisheries Association of British Columbia, Vancouver). 84 pp.
- Safety Liaison Working Group. 1997. Emergency Procedures for Fishing Vessels. (Marine Safety Agency, Southampton, Hampsh., U.K.).
- Satia, B.P. 1993. Safety at sea: top priority. IDAF Newsl. (FAO), (19):4.
- Wagner, B. 1999. Safety and Health in the Fishing Industry (International Labour organization – Sectoral Activities Programme) ILO, Geneve. 100 p.
- Williamson, J.A. et al. (Editors) 1996. Venomous and Poisonous Marine Animals. (Univ.New S.Wales Press, Sydney). 503 pp.

## **Concluding remarks by MB-Y**

It was a great meeting. Great amounts of fisheries related safety information and research results were exchanged. We shall hope that the lessons drawn and recommendations made here find their ways to the hearts and minds of all those whose decisions, leadership, performance and behaviour, may save lives. But let's not forget that we dealt here mostly with fisheries of industrially advanced countries, where even the small scale fishermen have access to an array of safety arrangements and equipment, not to speak of such well-organized, well-equipped, and experienced SAR services, like the excellent U.S. Coast Guard.

This having been said, as participants in an international conference we cannot fail to remember the predicament of small-scale fisheries worldwide, which while supplying most of the world's foodfish, bear the greatest share of the painful price. And we won't fail to remember that where the bulk of those fisheries operate little has ever been done about fishing people's health and safety.

Let's have the next international safety conference soon, and let's hope that a sponsor will come forwards who would contribute the funds necessary to attract a wider representation of activists in particular from countries where hundreds of thousands and millions of people fishing in small boats, daily and nightly put their lives and health at risk. Let's hope that such conferences would be followed up by a concerted international activity aiming at saving lives of fishing people and their boats all over the world.

As accidents, conferences don't just happen. Conferences have to be organized. So let's all thank Ann Backus, Jennifer Lincoln, and George Convey, as well to all others who've been involved in the planning and execution of this meeting, for the excellent organization and hospitality. May your efforts result in saving lives and boats.