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ANY OTHER BUSINESS

The impact of small craft on the marine environment – Proposed draft IMO Guidelines for the prevention of pollution from small ships and associated activities

Submitted by Barbados, Croatia, New Zealand and FOEI

SUMMARY

Executive summary:	Resulting from the interest at MEPC 57 to reduce the environmental impact of small ships the annex contains a proposed set of environmental guidelines intended to minimize this impact
Strategic direction:	7.1
High-level action:	7.1.4
Planned output:	7.1.4.1
Action to be taken:	Paragraph 9
Related documents:	Resolution A.990(25); MEPC 55/INF.5 and MEPC 57/20

Introduction

1 The vast number of small ships worldwide provide a potentially high risk of pollution to the marine environment. Also existing IMO instruments focus on commercial shipping engaged in international trade and consequently require that a lower limit of size to which certain aspects of the regulations can apply. In particular, mandatory flag State survey requirements, port State inspections and enforcement and the statutory fitting of certain pollution mitigation equipment, typically oil/water separators. This may have created the misconception that pollution control and management has limited application to small ships.

Background

2 Paragraph 5.5.3 of GESAMP report (MEPC 55/INF.5) drew attention to the significant oil inputs from small leisure craft, especially two-stroke outboard motors. Similarly, the vast amount of garbage generated during the operation of small ships, especially those engaged in the pleasure sector, coupled with a lack of appropriate reception facilities for the disposal of wastes ashore represent a potentially high risk of pollution to the marine environment.

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3 Paragraph 7.1.4 of IMO resolution A.990(25) "High-level Action Plan of the Organization and priorities for the 2008-2009 biennium" states:

> "Consider the need for the development of measures to prevent and control marine pollution from small craft."

4 Document MEPC 57/20 outlined a scoping list of aspects of small shipping that posed a potential adverse impact on the marine environment. A number of delegations supported the need for some form of guidelines, issued under the authority of IMO, to advise on the equivalent compliance of small ships to IMO environmental protocols and the general mitigation of pollution from small ships.

5 The delegation of Peru, in supporting the document, drew specific attention to the severe financial burden which could be placed on artisanal fishermen worldwide if they were required to replace their old outboard motors with modern less-polluting upgrades. Consideration, therefore, needed to be given to technical and financial support programmes if a reduction in oil pollution from artisanal fishing craft was to be viable.

6 The annex to this document sets forth draft guidelines for the environmental management of small ships prepared in consultation with a number of delegations and taking into account the discussion at MEPC 57.

7 However, queries remain over the degree to which IMO may wish to offer prescriptive guidance for the full range of small ship activity. Yacht cruising/racing (power and sail), coastal ferries and tourist vessels, small high-speed powered craft, personal water craft, sailing dinghies, sea kayaking, artisanal fishing boats and canoes, etc., are all forms of small shipping activity each with a variation of potential environmental impact and in variable proportions depending on location, culture and natural assets of individual Member States.

8 Also there is a clear relationship between competent boat handling and navigation and the protection of the marine environment. The International Certificate of Competence is suggested as a minimum level of competence for recreational navigation. However, this may be considered outside the scope of the Committee to recommend or to which aspect of the small ship class it should apply.

Action requested of the Committee

9 The Committee is invited to consider the document and take action, as appropriate, on:

.1 the text of the draft IMO Guidelines for the prevention of pollution from small ships and associated activities contained in the annex; and

.2 the related issues in paragraphs 5, 7 and 8 above.

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ANNEX

DRAFT IMO GUIDELINES FOR THE PREVENTION OF POLLUTION FROM SMALL SHIPS AND ASSOCIATED ACTIVITIES

1.1 Preamble

1.1.1 IMO conventions, codes and regulations for the prevention of marine pollution from maritime activity are predominantly aimed at commercial ships engaged in international trade and order to establish a globally consistent range of controls. Inevitably this demands that there is a lower limit for Flag and Port State implementation and enforcement. This may be expressed as a tonnage limit, length of ship or number of persons carried, also exemption from survey requirements and the fitting of certain pollution mitigation equipment are permitted.

1.1.2 Although the smaller classes of ships may appear to have derogation from certain aspects of IMO instruments the expectation is that they will adopt an equivalent compliance strategy. However, because the small ship class has a more varied voyage itinerary i.e. mainly coastal waters, than their larger counterparts' additional precautionary measures are necessary to ensure environmental sustainability.

1.1.3 The guidelines are intended for use by ships or craft to which these guidelines are directed and are likely to be pleasure yachts (power & sail), small coastal ferries and tourist sightseeing craft, artisanal fishing craft, sport fishing boats, dive support boats, etc. This range of vessels often operates in shallow environmentally sensitive waters of high nature conservation interest, both in the sea and at the coastal fringe. Although a single vessel may have negligible environmental impact the cumulative effect of the many small boats that use coastal waters represent a high potential for environmental impact.

1.1.4 Many States and a number of regions have already adopted regulations and protocols that endeavour to control or manage small ships environmental performance. These augment and place in a national context IMO protocols and additionally reflect the environmental priorities of Member States. Such regulations may impose duties and responsibilities on the relevant actors and stakeholders involved both ashore and at sea. In addition these may be underpinned by codes of practice, advisory notes and informative publicity targeted at the relevant sectoral interests.

1.1.5 These IMO guidelines therefore are intended to assist in clarifying any perceived anomalies in IMO environmental instruments, to augment any existing national protocols and to advise those States that are yet to address the issue of the environmental impact of small ships. These guidelines do not supersede any national regulations or protocols or the rights of sovereign States under UNCLOS.

1.1.6 The principal range of issues that are addressed is listed below with guidelines of what precautionary action to be taken by the sectoral actors and stakeholders involved are outlined under their relevant headings.

- Operational wastes from garbage – plastic bags & containers, paper, cardboard, cans, glass bottles, rope, nets, line, and food waste, etc.

- Operational wastes from oil/fuel – oily bilge water, lube oil leakage, fuel spillage during re-fuelling, combined exhaust/cooling water.

- Wastewater/Sewage – black water from sea toilets & holding tanks – grey water from sinks – washing up/cooking, etc.

- Alien aquatic species – from hull bio-fouling and ballast water.

- Disturbance – to marine wildlife, from hull & propeller wash, noise.

- Maintenance waste – toxic anti-fouling residues, cleaning solvents, bio-waste from hull fouling, batteries, etc.

- Habitat loss/damage – from anchoring, grounding, trampling when landing ashore, harbour/marina construction.

1.2 Definitions

For the purposes of these guidelines, unless expressly defined otherwise:

.1 **Administrations** means all national agencies established by Government to administer the guidelines, including the necessary mechanisms for co-operation and consultation for the purpose of the guidelines.

.2 **Anchorage** means an area designated by the Administration for that purpose, mindful of the provisions of international law on *force majeure*. Berthing and moorings may be provided within an anchorage.

.3 **Facilities/Equipment** means those provided for the reception of waste as defined in the MARPOL Convention and its relevant Annexes and the IMO Manual on Port Reception Facilities, in particular bins, containers, dumpsters, filtration systems, storage tanks, pumps and related hardware to control, prevent or minimize pollution of the marine environment and adjacent land.

.4 **Marina/Small ship harbour** means the purpose-built infrastructure to service the needs of recreational craft by providing protected berthing, storage for boats ashore, slipways, chandleries, lavatories, waste reception, fuel, water, and maintenance facilities.

.5 **Nautical tourism** means the use of the marine environment by visiting ships for leisure and pleasure purposes, and local ships for charter, including the use of supporting infrastructure and facilities where available.

.6 **Pollution** means the introduction of substances or energy directly or indirectly by humans into the marine environment resulting in such deleterious effects as harm to living resources, hazards to human health, hindrance to marine activities including fishing, physical or chemical disturbance to natural habitats, impairment of quality of seawater and reduction of amenities.

.7 **Recreational navigation** means the specific movement and activity on the water of small ships for leisure or pleasure purposes, including such small ships in passage.

.8 **Boatyard** means a facility which provides services to small ships including but not limited to repair and maintenance services.

.9 **Small ship** means a vessel or boat used for the purpose of leisure or recreation, including yachts, (power and sail), both privately owned and on charter, sport fishing boats, diving support boats and sightseeing vessels, and other small craft, such as artisanal vessels, operating in the marine environment, marinas and anchorages.

.10 **Users** means those persons who use the marine environment for leisure purposes in vessels as defined in .9. They may comprise the skipper (captain), crew, guests and paying passengers of recreational craft, including those who receive remuneration for services rendered. Users also include the captain and crew of small artisanal fishing boats that use marinas, small ship harbours and anchorages.

Guidelines for administrations

2.1 Introduction

2.1.1 IMO instruments largely focus on the required performance of ships engaged in international trade. However, to ensure the effective environmental sustainability of these provisions the landward fringe providing facilities and the more environmentally sensitive coastal waters they navigate cannot be ignored. This is especially so for small ships engaged in nautical tourism and recreational navigation.

2.1.2 Due to their size and operational practices they will generate substantial quantities of waste but with limited storage capacity on board. Small tourist sightseeing craft increasingly offer to passengers an enhanced range of services that may include cooked meals afloat, bars selling drinks, swimming and snorkelling, marine wildlife watching and picnics ashore in remote locations. These ships especially have particular requirements as they are usually below the IMO limit for enforcement of conventions but produce a disproportionately high level of environmentally significant wastes and impact. Administrations should pay special attention to this form of nautical tourism.

2.1.3 Safety of navigation is a crucial part of environmental protection. Avoiding collisions and groundings will prevent accidental release of wastes and fuels. Small ship operators who are competent in navigation and understand the international rules of the sea will be those also reduce the incidents that compromise the safety of larger commercial ships that use the same confined costal waters.

2.2 Guidelines

2.2.1 The precautionary approach demands pre-emptive planning so that environmental impacts can be minimized. Integrated Coastal Management and Marine Spatial Planning (ICM/MSP) are mechanisms that can formalize these requirements. Administrations should introduce this methodology of planning, including the operational requirements of small ships, so that environmentally sustainable management can be clearly provided.

2.2.2 Regularly undertake a national survey of important sites of nature conservation importance in coastal waters and the adjacent terrestrial fringe for incorporation into the ICM/MSP system.

2.2.3 Establish the parameters for the sustainable use of the coastal environment by small ships bearing in mind their operational practices so that any Associated Protection Measures can be determined. The IMO protocol for the establishment of Particularly Sensitive Sea Areas may offer a useful template for this process.

2.2.4 Prior notification is an essential component of sustainable use. Incorporate no anchoring areas, defined landing places, any prohibitions on landing or taking the ground for environmental reasons, locations of waste reception facilities, etc., into nautical charts (small craft editions) and pilot books. Provide education and environmental awareness programmes to inform the stakeholders of the required operational environmental performance of small ships.

2.2.5 Implement mandatory regulations to provide reception facilities for garbage in all forms where small ships dock, anchor or moor such as marinas, small boat harbours and anchorages. Waste management plans should form a part of this requirement and where possible plan for recycling segregated waste. Consider the importance of quarantine facilities for food waste, dead animals and animal waste.

2.2.6 Implement mandatory regulations for facilities ashore to collect oil waste (sump oil) oil/water mixtures (bilge pumping), old batteries (lead acid – nickel cadmium, etc.) and outdated distress flares.

2.2.7 Implement controls on the use of sea toilets where black water discharges compromise water quality. This is especially necessary in confined waters of low tidal flushing and congested anchorages and moorings. Holding tanks will be required in these circumstances with associated pump out facilities available ashore.

2.2.8 Implement controls on in water scrubbing and cleaning of boat hulls. This should be undertaken ashore at specialist facilities that collect and contain the toxic residues from anti-fouling paint and bio-fouling. (Note: the use of TBT anti-fouling is now prohibited worldwide.)

2.3.9 Implement a programme of training and certification for operators of small tourist boats regarding all forms of waste management, protocols when wildlife watching (see appendix) and required pollution management practices. (Note: it is mandatory for small ships with 15 or more persons aboard to manage sewage discharges i.e. fitting a holding tank.)

2.2.10 Require operators of pleasure craft to hold a minimum qualification for safety at sea. (The International Certificate of Competence or equivalent is a useful example.)

2.2.11 Initiate a technical co-operation and compensation programme for artisanal fishermen to replace or where possible upgrade environmentally unsustainable two-stroke outboard motors.

Note

National and regional environmental priorities may demand that mandatory controls on small ships operating in their territorial waters extend substantially beyond the above list of guidelines because of the operational characteristics of nautical tourism and recreational navigation.

Guidelines for users

3.1 Introduction

3.1.1 Small ships to which these guidelines are directed are classified by IMO as "unregulated". However, this does not mean that they are exempted from compliance with relevant IMO instruments both for safety at sea and for environmental protection. The derogation from IMO regulation therefore only relates to exclusion from certain survey requirements by classification societies and mandatory inspections under flag State and port State control protocols.

3.1.2 From the perspective of an individual small ship the environmental impact may appear negligible. However, the nature of small ship operations indicates that thousands of this class of vessel can occupy the same water body simultaneously. Also they largely operate in shallow coastal waters often of high environmental sensitivity. Indeed for pleasure and tourism purposes it is the experience of enjoying coastal areas of high natural amenity, including the wildlife that lives there, is the main reason for visiting.

3.1.3 Individual States or those collaborating in a regional structure of marine management may choose to implement mandatory environmental controls for small ships operating within their territorial seas. Such controls may either be based on IMO protocols or extend beyond IMO requirements due to local environmental sensitivity. Nonetheless the environmental performance of small ships is largely self-managed due to the vast numbers of vessels involved, which worldwide can be measured in many millions.

3.1.4 As with large commercial ships the master (skipper) of a small ship is responsible for its navigational safety and its environmental management. It is incumbent upon the skipper to ensure that crew members and passengers are made aware of the environmental management of the vessels activities, especially pollution control. The skipper must also ensure that the vessel has the capacity for proper waste management afloat and that any associated equipment suitable for the purpose is available.

3.2 Guidelines

3.2.1 The operating parameters of small ships (i.e. navigating in coastal waters, estuaries and semi-enclosed bays), demands extra measures for waste management. All garbage should be retained on board the vessel for later disposal ashore. It is therefore essential to ensure that the vessel has sufficient space to store the waste in a sanitary condition when on passage. Remember that if thrown in the sea, orange peelings, banana skins, etc., will quickly wash ashore despoiling amenity beaches and swimming areas.

3.2.2 Appropriate containers should be carried on board to enable segregation of waste. Metal cans, glass bottles, plastic materials, cardboard and paper are all capable of being recycled. Food waste demands special attention as it may need quarantine treatment. Plant and animal waste may be diseased, and if discarded to sea could drift ashore to infect other places if not contained and should be disposed of ashore in a special leak-proof bin for later incineration. Those small ships that transport live animals should dispose of any dead carcasses and animal waste in a similar way. This approach is especially crucial for voyages within and between island States.

3.2.3 Pre-planning for waste management is the key to preventing pollution at sea. Removal of any unnecessary wrappings and packaging prior to loading on the vessel can reduce the waste storage burden afloat. Pre-planning should also include the identification of locations where reception facilities are available for final disposal of waste from the ship. It needs to be understood that waste reception facilities will not be available on very small islands especially those that are normally uninhabited, therefore pre-planning for this eventuality is essential.

3.2.4 The nature of waste generated by small ships is usually of a domestic type and scale. However, certain wastes require special consideration to prevent marine pollution. A typical example is the waste generated by tourist boats that offer restaurant facilities. The discharge of old cooking oil through the grey water outlet potentially may have a similar effect on sea birds as an oil spill. Therefore grey water should be collected in a holding container and transferred ashore for proper disposal. Any washing up or cleaning products used on small ships should be phosphate-free to minimize the risk of over enrichment of the sea.

3.2.5 The discharge of untreated black water from toilets to sea is prohibited for small ships that have 15 or more persons on board. A holding tank is therefore required. Other classes of small ship may also require holding tanks where local regulations prohibit the discharge of sewage to sea within the operating range of the vessel.

3.2.6 In circumstances where no local controls are in place discretion is required when using sea toilets. Avoid using within 250 metres of the shore where tidal flushing is poor. Empty holding tanks at least 3nm from land and when the ship is underway.

3.2.7 Oil discharges from a single small ship are usually negligible but the cumulative effect can be equivalent to a major oil spill. It therefore requires individual action by all users. The primary action is prevention. Bilge water contaminated with oil should not be pumped overboard. Therefore regular maintenance is essential to ensure there is no leakage of lube oil from in board engines and that fuel lines and tanks are all secure. Use absorbent bilge pads/socks to soak up any oil and fuel spillages and dispose of saturated pads ashore subject to environmental regulations. Contaminated bilge water can also be collected for disposal ashore in a dedicated facility. Consider fitting an oil/water separator now commonly available for small boats.

3.2.8 The engine exhaust on small ships is usually discharged combined with cooling water and can be a major source of oil pollution. Therefore it is important to ensure that in-board engines are working at maximum fuel efficiency at all time. Two-stroke outboard motors are especially polluting and the older models should be scrapped or upgraded to at least a (95%) – (98%)? efficiency. Four-stroke or electric outboards are more environmentally sustainable replacements.

3.2.9 Exhaust emissions also require management. To reduce emissions ensure that the ship's engine is working at maximum fuel efficiency. Two-stroke outboards can have very poor fuel efficiency with below water level exhaust discharges having substantial quantities of unburnt fuel containing high levels of poly-aromatic- hydrocarbons. The use of alkylate gasoline can reduce these discharges considerably.

3.2.10 When refuelling contain overspills by the use of an absorbent "donut" or ring. When refuelling from containers use a funnel and keep absorbent cloths at hand for accidental spillover. Where possible avoid refuelling at sea. Refuelling should be conducted in harbour or sheltered anchorages to further reduce the risk of spillage.

3.2.11 After an oil change old sump oil (lube oil) after an oil change must be disposed of in a dedicated facility ashore. In addition old oil/fuel filters and any cleaning up cloths should also be brought ashore for disposal in a facility dedicated for the purpose.

3.2.12 Worn out lead/acid batteries and spent nickel/cadmium batteries etc. must be disposed of in a containment enclosure at the waste collection station ashore. Similarly, outdated distress flares should also be placed in a metal fireproof container provided for the purpose.

3.2.13 Avoid in-water scrubbing of the ship's hull. This should be done at a dedicated containment facility ashore to avoid the release of toxic anti-fouling residues and bio-fouling waste to the sea. Where hull cleaning can only be undertaken on a slipway, beach or inter-tidal zone place a plastic sheet or tarpaulin under the vessel to contain any washed off residues which then should be collected and disposed of safely ashore.

3.2.14 Small boats are a major vector for the transfer of invasive species, mainly due to hull fouling. In addition, bilge water, anchors and chains together with discrete areas of the ship can provide a temporary habitat for these biological stowaways. Undertake quarantine procedures by scrubbing mud and weed off anchors and chains, keep the ships hull clean and regularly apply the most effective approved anti-fouling. (Remember it is now illegal to apply TBT-based anti-fouling to any ship worldwide.)

3.2.15 Small craft used for water-sports and fishing often operate from one water body to another. This activity has the potential risk of translocating unwanted aquatic species. Therefore, after recovery of the craft from a water body a quarantine procedure should be adopted. Cleaning the boats hull and trailer, emptying out any bilge water, flush out the engines cooling system with clean water, etc., will all reduce the risk.

3.2.16 Nautical tourism and recreational navigation by the nature of the activity will take place in coastal waters of high natural amenity and nature conservation interest both at sea and at the terrestrial fringe. Disturbance to wildlife and their habitats can be described as physical pollution. Excessive noise from engines, shouting, splashing water and erratic changes of direction at high speed in small craft can all compromise sustainable use. Therefore use appropriate discretion and control such excesses.

3.2.17 Important habitats are found under the sea surface, along the seabed. Anchoring can damage these sites, especially if the anchor drags or swings the mooring chain. Consult up-to-date nautical charts and pilot books and local information and avoid anchoring over these sites. Coral reefs and sea grass beds are especially prone to this form of damage. Use defined anchorages where ever possible and visitors permanent moorings when available.

3.2.18 Grounding on and collision with benthic habitat, such as corals and sea grass, can result in damage. When navigating in shallow waters care should be taken to avoid damage by propellers on high powered craft or keel strikes from sailing yachts. This type of damage can be avoided by competent boat handling.

3.2.19 Hull and propeller wash from high speed power boats can have a disastrous impact on habitat at the waters edge. Salt marsh, mangrove, mudflats etc. are all vulnerable to the waves of these boats. Vessels should moderate their speed to reduce wash and maintain sufficient distance from the shore to limit disturbance where birds are feeding or marine mammals are resting.

3.2.20 Marine mammals often attract attention because of their charismatic nature. They should not be chased or harassed in any way. Appendix 1 gives guidance on how to act when they are around.

3.2.21 Nautical tourism can facilitate access to pristine areas of high natural amenity, especially in small island groups, some of which may be largely uninhabited except by wildlife. Respect warnings on nautical charts, pilot books and informative leaflets not to land. Where landing is not restricted users should step ashore with great care to avoid trampling plants and birds nests. Turtles may breed there so be aware of the signs of occupation as their eggs will be buried. If signs are observed it is better to leave rather than risk damaging the eggs or young by staying on the beach.

3.2.22 When landing from the boat do so at clearly defined landing places. If landing on beaches do so at clearly used customary locations. Although pristine and remote spots ashore clearly offer an attractive experience it may be better to enjoy them by staying on the boat as they could also be the unique habitat of rare and endangered species.

3.2.23 Propeller cutters are fitted for emergencies if accidental entanglement in marine debris, such as rope, should occur. They are not a signal that static fishing gear can be ignored and it should be avoided. Cutting away rope and nets that float away will result in ghost fishing and may entrap marine mammals and sea birds. Respect the practices of artisanal fishermen and their equipment. A fishing net may be their most precious possession and its loss could have dire social consequences.

3.2.24 Refer to appendix 5 for a placarding template for awareness raising on board craft engaged in nautical tourism and recreational navigation. Refer to appendix 2 for an environmental self management check list. The limited number of small ships that use ballast water taken on from the sea should refer to the IMO Ballast Water Management Convention – Guideline G3.

A self-evaluation environmental checklist is provided in appendix 2.

Note

The free public right of navigation and the rights of innocent passage are not unconditional. UNCLOS places a responsibility on coastal States to protect any environmental resources under their jurisdiction. Because of the nature and voyage itinerary of nautical tourism and recreational navigation mandatory controls and or regulations that go beyond IMO protocols should be expected.

Guidelines for marinas, small ship harbours and boatyards

4.1 Introduction

4.1.1 Marinas, small ship harbours and boatyards have a crucial role in the attainment of closed circuit pollution control of the small ship maritime sector.

4.1.2 In addition to providing sheltered moorings for small craft, marinas and small ship harbours are a focus for the disposal of operational wastes accumulated during a voyage. This is an essential service as a marina or small ship harbour is often the port of entry and reporting for foreign vessels and that have substantial quantities of waste from their voyage abroad and during such voyages will have substantial quantities of waste waiting disposal.

4.1.3 Wastes generated by the activities conducted and services offered by boatyards within the marina or small ship harbour also require sustainable management. The maintenance of small ships will generate possibly toxic residues from paint scrapings, washing down, engine oil changes, etc. There are likely to be national regulations and controls for health and safety and water quality to which a facility must comply and these would take precedence over these guidelines. However, where none are in place the guidelines will be useful.

4.1.4 Perhaps the most environmental damage that can potentially be caused is by the construction of a marina, small ship harbour or boatyard initially. By virtue of the necessity of location at the coastal fringe coral reefs, mangrove swamps, sea grass beds and salt marshes and similar habitat can all be destroyed if facilities are badly planned and located.

4.2 Guidelines

4.2.1 Prepare a waste management plan for the marina or small boat harbour that should include wastes from the small ships using the facility and wastes arising from the operations within the facility including any boatyard. Such a plan should identify how specific waste streams are to be handled together with their final collection and disposal arrangements.

4.2.2 Provide waste disposal facilities in the form of environment stations. An Environment Station should comprise as a minimum separate bins for paper & cardboard, glass bottles, metal cans, plastic bottles, a leak proof dumpster for food waste etc. For large marinas several stations will be necessary. Drums designated to receive waste oil, oil/water mixtures should be provided. Old lead/acid batteries can also be placed within the bunded area. A small bin for spent nickel/cadmium batteries is also necessary. A lockable metal bin for out-dated distress flares may be provided at the environment station or depending on circumstances in a more secure situation such as in the chandlery.

4.2.3 In the case where a marina or small ship harbour is used by a substantial number of artisanal fishing craft additional reception facilities may be required such as purpose built enclosures for old and broken fish boxes, old nets and rope, drift wood and fish waste. Details can be found in the IMO Comprehensive Manual on Port Reception Facilities – Chapter 14.

4.2.4 Small pleasure craft often use chemical toilets. An emptying facility should be provided and details are available in the IMO Manual.

4.2.5 If national controls are placed on discharges of sewage from sea toilets, a facility for holding tank pump out is required. This may be provided at a dedicated bay, conveniently placed alongside the fuelling jetty. Alternatively a small boat with tank and vacuum pump can be provided that can visit each boat at its berth. A similar installation may be provided on a wheeled trolley, which could be taken to each boat via the pontoons.

4.2.6 Quite clearly similar reception facilities are required for wastes arising within the marina, harbour or boatyard itself.

4.2.7 Fuel should be stored in secure bunded tanks at least 10 metres from the waters edge. The fuelling nozzle and associated metering on the jetty should also be bunded with a spill kit of cloths, adsorbent sheets and "socks" available nearby for instant use.

4.2.8 For small ship harbours where boats are on swinging moorings or at anchor a floating barge may be more convenient for waste collection or fuelling. However, all precautions to prevent spillage must be taken.

4.2.9 In addition, special waste management procedures are required for boatyards offering maintenance services. Toxic (dry and liquid) and bio-fouling residues from antifouling activity should be contained, collected and appropriately disposed of ashore. A dedicated bay should be provided for pressure washing boat hulls and should be designed to contain all residues that should be pumped to a bunded tank for final collection.

4.2.10 Where hull cleaning, scraping and scrubbing is undertaken on slipways all residues should be contained on plastic sheets and a sand bag bund, and collected and disposed of ashore as before.

4.2.11 Under no circumstances should pressure washing occur over water or on slipways that allow residues to run back into the sea.

4.2.12 Drainage systems for hard standing areas should not drain directly to sea. Gullies with deep seal traps or intercepting chambers should be provided to prevent any hydrocarbon residues from washing in the sea.

4.2.13 Emergency containment booms and barriers together with an emergency plan should be available in marinas in case an accidental fuel or oil spill occurs. This should allow for both accidental spillages ashore and on the water.

4.2.14 Where expanded polystyrene floatation units are used for pontoons ensure that there is adequate fendering to prevent sections breaking off during hard docking by vessels. Alternatively, use a different floatation material or encapsulate expanded polystyrene in glass fibre resin or ferrocement.

4.2.15 Chandleries should be available that stock up-to-date nautical charts and pilot books, that in addition to advice on navigational safety contain information regarding sensitive wildlife sites and what to do when they are encountered. This information may also be available in leaflet form.

4.2.16 Stock oil/fuel absorbent socks and cloths for sale to small ships, engine spares and manuals for inboard and outboard engines that improve fuel efficiency. Consider stocking cans of alkylate fuel to enhance the environmental performance of two stroke outboard motors. Phosphate free cleaning products should also be stocked both for use on the boat and for boat maintenance purposes. These can be sold to small ships.

4.2.17 When planning and designing a marina, small ship harbour or boatyard carry out an Environmental Impact Assessment as minimum requirement. Appendix 4 provides a useful *aide-memoire*.

4.2.18 Toilets should be available ashore 24 hours a day as the use of sea toilets will be prohibited within the marina and small ships harbour. Where marinas are large several toilet blocks may be required to offer easy access from moored craft.

4.2.19 Environment stations, toilets etc. should be well sign posted, lit at night and located in easily accessible places. Environmental management practices of the marina or boatyard should be clearly displayed on notice boards and in berth holders instructions issued with invoices, etc.

4.2.20 An environmental management audit should be carried out at least annually and any shortcomings identified. Equipment not up to standard should be repaired or replaced. Environmentally sustainable management is an absolute and should not be dependant on the economic fortune of the facility. A self-evaluation form is in appendix 3.

4.2.21 In addition to the usual services on offer, boatyards have a major role in re-cycling old vessels. So often they are left to rot on the shore leaking oil and fuel and despoil the coastal amenity. Small craft can produce much useful material for re-use and re-cycling such as lead and iron keels, propellers, cleats, blocks, aluminium masts, sails and rigging, hardwood hull structures and so on. Redundant glass fibre hulls do not bio-degrade but can be cut up by chain saw for crushing into construction materials. These options are preferable than doing nothing.

A self-evaluation environmental checklist is provided in appendix 3.

Guidelines for anchorages

5.1 Introduction

5.1.1 Anchorages are usually natural coastal features that offer shelter from adverse weather and are likely to comprise embayments, rivers, creeks, and lagoons. The terrestrial fringe may comprise natural sandy beaches, mangrove, salt marsh, etc. Also an anchorage may be adjacent to a town or fishing village.

5.1.2 With the popularity of nautical tourism anchorages have become a major natural economic resource with local restaurants often offering free facilities to pleasure craft to attract their interest. Boatyards may also be found around the fringe of an anchorage offering a range of services from boat building to repairs and maintenance.

5.1.3 Because of their public ownership anchorages are often administered by the local municipality which may respond to duties placed upon it by the national administration or may be virtually autonomous. Local users have clear socio-economic attachment to an anchorage especially if they are artisanal fishermen. However, visiting craft represents a dilemma. Charging for the disposal of waste may dissuade users from using the reception facilities ashore. Conversely if charges are made for anchoring to subsidize reception facilities it may discourage users away to sites that are more environmentally sensitive.

5.2 Guidelines

5.2.1 For anchorages to be used in an environmentally sustainable way positive precautionary management is required. Some management systems are by the establishment of a harbour authority with a harbour master as the principle administrator usually for navigational safety reasons but now embracing environmental issues. Such a system should be established as a micro-managed component of a national ICM/MSP plan.

5.2.2 Maintain a local inventory of habitats and species of nature conservation importance together with socio-economic uses such as the commonly used locations of static fishing gear, fish farms, bathing beaches, etc.

5.2.3 Determine appropriate zones for anchoring which do not compromise the above and provide detailed information for inclusion in pilot books and nautical charts.

5.2.4 Establish as required permanent moorings for the local community tethered to the seabed, with a floatation buoy and strop. A proportion of these permanent moorings should be available for visitors. Permanent moorings are a way of providing for tying up small ships within sensitive benthic habitat as the seabed is disturbed only once with a lower risk of dragging and chain scouring.

5.2.5 Provide simple jetties that define a landing place for yacht tenders, tourist sight seeing boats, etc., these can be timber, stone or concrete and should be located for minimum environmental impact.

5.2.6 Reception facilities should be provided for small ships operational wastes ashore and should comprise facilities as previously described. However, the full range of recycling facilities will only be reasonable if there is already such a system in place for domestic garbage in the local community in which case a dumpster for all garbage and a container for oily mixtures is the minimum requirement.

5.2.7 Artisanal fishermen can take any operational wastes home for disposal in the community waste management stream. Visiting pleasure craft cannot and alternative approaches may be for local restaurants to accept operational wastes as part of their service to visitors. Whatever approach is taken something must be provided for wastes arising from seaward otherwise it will end up in the sea and ultimately on amenity beaches.

5.2.8 By tradition artisanal fishing craft are drawn up onto the local beach above high water mark. Here all manner of maintenance is undertaken including hull scrubbing, scraping and painting with anti-fouling. Containment of residues is essential as previously described for slipways. Increasingly pleasure craft are adopting similar practices to save boatyard and marina costs. In these circumstances a high degree of self management is demanded as these users are often visitors to another's environment.

Attention is drawn to the references for more detail and from which these guidelines are derived. Worldwide there is now a massive amount of useful advice on the sustainable operation of small ships and details can often be found on dedicated websites.

References

MARPOL Annexes I, IV & V – IMO, London

International Convention on the Control of Harmful Anti-fouling Systems on Ships, 2001 – IMO, London

Ballast Water Management Convention – IMO London

Resolution A.982(24) – Revised guidelines for the identification and designation of Particularly Sensitive Sea Areas – IMO, London

Comprehensive manual on Port Reception Facilities – IMO, London

Code of conduct for the prevention of pollution from small ships in marinas and anchorages in the Caribbean Region – Issued by Marine Environment Division, IMO, London

Guidelines concerning pleasure craft activities and the protection of the marine environment in the Mediterranean – UNEP/MAP Athens

GESAMP Reports and Studies No.75 – Estimates of oil entering the marine environment from sea-based activities – IMO, London

Code of Practice for Anti-fouling and In-water Hull Cleaning and Maintenance – ANZECC

Recycling for a cleaner marine environment – A guide for marinas, ports and terminals – Texas A and M University and Louisiana State University

The Green Blue – Making the environment second nature – RYA/BMF/DEFRA, UK

APPENDIX 1

GUIDANCE FOR APPROACHING CETACEANS

When a pleasure craft approaches an individual or group of marine mammals, the following recommendations should be followed:

pleasure craft should be operated so as not to disrupt the normal behaviour of marine mammals;

contact with marine mammals should be abandoned at any stage if they show signs of becoming disturbed or alarmed;

particular care should be taken when calves are present;

users should refrain from feeding the animals or throwing food to attract them;

if more than one craft is in the approach zone, coordinated movements of the boats around cetaceans should be ensured using radio communication;

a dedicated observer should be on duty wherever possible, in addition to the captain of the pleasure craft;

care should be taken such that no marine mammal should be separated from a group, or a mother from her calf, or a group be dispersed;

under no circumstances should marine mammals be driven forward or their movements blocked by the pleasure craft;

sudden or repeated changes in the speed or direction of your leisure boat should not be made except in the case of an emergency;

pleasure craft should not drift towards cetaceans;

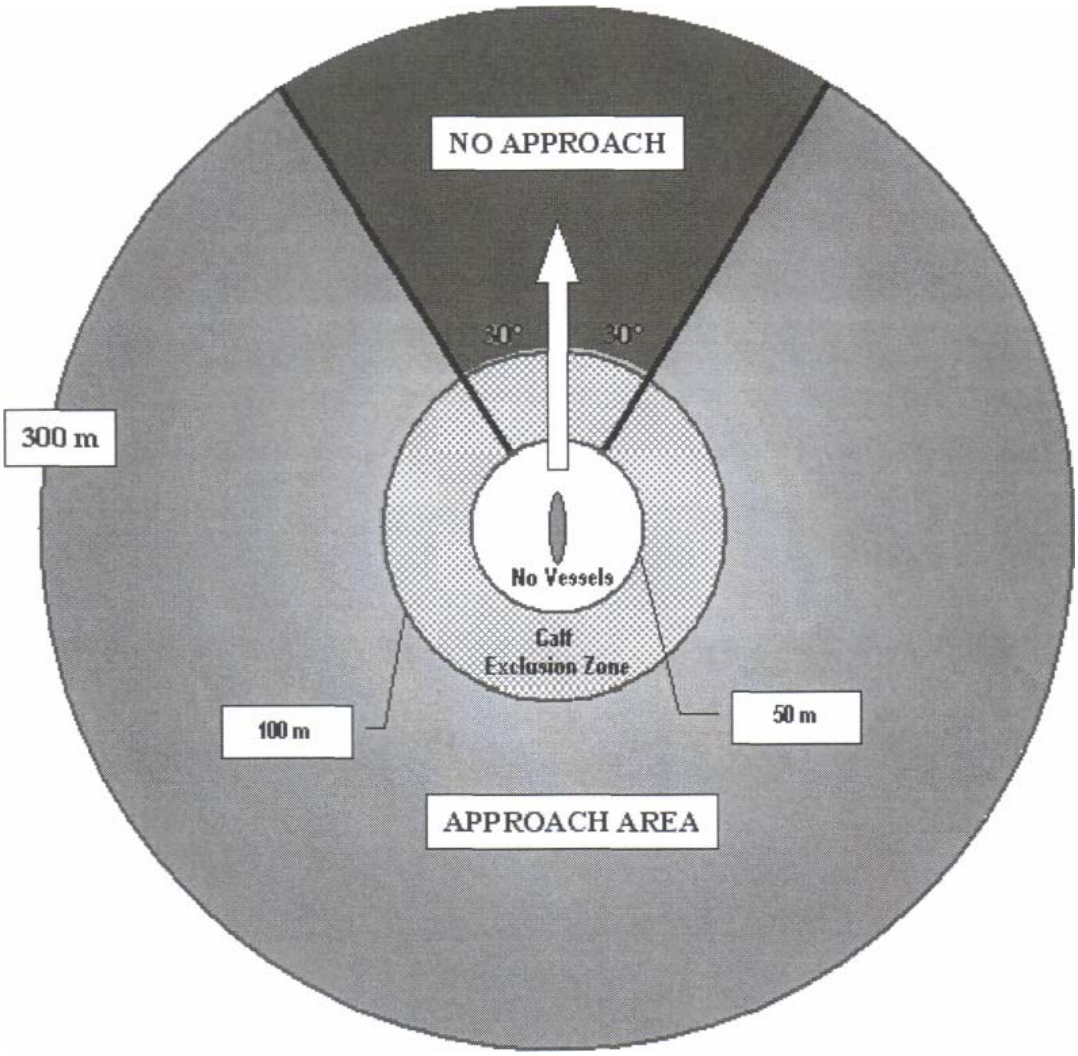
if cetaceans approach the pleasure craft or bow ride, a slow, steady speed (for guidance, 6 knots or under) should be maintained without changing direction (if unsure of their movements, operators should slow down gradually and put the engine into neutral);

where a pleasure craft stops to enable the users of pleasure craft to watch a cetacean, the engines should be placed in neutral;

when departing from watching cetaceans, it is important to determine where the animals are located to avoid collisions or coming too close to the animals. In some circumstances it may be necessary to wait for the animals to return to the surface from a dive to be certain of to their position;

cetaceans should never be approached head-on but from the rear or the side, nor should the craft sail alongside.

Listed recommendations are taken from the Guidelines for Commercial Cetacean-Watching Activities in the Black Sea, the Mediterranean Sea and Contiguous Atlantic Area, developed by the Secretariat of ASCOBANS (Agreement on the Conservation of Cetaceans in the Black Sea, Mediterranean Sea and Contiguous Atlantic Area) and RAC/SPA (Regional Activity Centre for Specially Protected Areas of the Mediterranean Action Plan).



Distances are from the animals (centre of the drawing).
Boat speed should be constant in the approach area.

APPENDIX 2

SELF-EVALUATION OF THE ENVIRONMENTAL MANAGEMENT OF PLEASURE CRAFT

	Not applicable	Yes	If no	
			Planned for (month/ year)	Main hindranc(es) or difficulty(ies)
1. Is the pleasure craft fitted with tank(s) dedicated to the collection of oily wastes?				
2. Is the pleasure craft fitted with tank(s) dedicated to the collection of black water sewage?				
3. Is the pleasure craft fitted with tank(s) dedicated to the collection of grey water?				
4. Are the equipment and space allocated to store garbage onboard adequate?				
5. Is garbage sorted on board?				
6. Is there a garbage management plan developed according to IMO international standards[1]				
7. Is there a Garbage Record Book?				
8. Are the rules requiring that substances that are toxic, persistent or bio-accumulative (paints, pesticides, hydrocarbons, etc.) should not be disposed of at sea applied?				
9. Is the ratio (fuel/oil) of the fuel mixture of the two-stroke outboard engines used by the pleasure craft carefully controlled?				
10. Is the information on the procedure to follow if the pleasure craft causes an accidental fuel spillage clearly indicated?				
11. Are the hull maintenance operations carried out in areas fitted with appropriate anti-pollution equipment?				
12. Are the anti-fouling systems used recognized as environmentally friendly?				
13. Is the pleasure craft fitted with an appropriate anchoring system?				
14. Is the information about endangered or threatened species, sensitive natural sites and invasive species available onboard?				

[1] The garbage management plan and the Garbage Record Book are required for every craft of 400 tons gross tonnage and above and every ship certified to carry 15 persons or more.

APPENDIX 3

SELF-EVALUATION OF THE ENVIRONMENTAL MANAGEMENT OF MARINAS

	Yes	If no		
		Planned for (month/year)	Estimated cost	Main hindrance(s) or difficulty(ies)
1. Is the location of the waste reception facilities well indicated?				
2. Are the facilities for wastewater reception equipped with pumps and/or vacuum extraction systems, and can the pleasure craft easily discharge their sewage water?				
3. Are your reception facilities compatible with the best available techniques for waste storage and processing?				
4. Are your fuelling facilities designed in a way that minimizes the risks of spillage?				
5. Are your solid waste reception facilities compatible with waste sorting systems?				
6. Is the procedure to follow, in case of an accidental fuel spillage, clearly indicated?				
7. Is the size/capacity of your reception facilities adapted to the size and number of pleasure craft frequenting the marina, including during the peak seasons?				
8. Is the information on the sensitive biological formations located in the areas surrounding the marina available?				
9. Are the financial needs of the environmental management of your marina clearly stated in the marina budget allocation?				
10. Do you have a waste management plan for your marina?				
11. Are operations related to waste management in your marina recorded?				
12. Are you keeping records of pollution incidents?				
13. Have you set up emergency procedures in case of pollution?				
14. Is the equipment for implementing the emergency procedures available?				
15. Are you conducting regular simulation exercises to your emergency procedures?				
16. Are you regularly cleaning up your marina from waste, including oil?				

APPENDIX 4

PRINCIPLES FOR THE PLANNING, SITING AND DEVELOPMENT OF MARINAS, SMALL SHIP HARBOURS, ANCHORAGES AND RELATED FACILITIES FOR NAUTICAL TOURISM

Apply the precautionary approach widely if environmentally sustainable development objectives are to be achieved. This means that the environment is given the benefit of the doubt over what effects human activity will have on natural physical processes and organisms. Regretting the damage after the event is no longer an option. The impact of nautical tourism, and the necessary infrastructure to support it, will have an effect at local, sub-regional and regional levels but will need to be placed in an overall environmental context.

There must be adequate scientific baseline data for sustainable development to take place, in particular to inform environmental impact assessments for actual proposals. Such data should include natural coastal physical, chemical and biological processes, inventories of species of marine plants and animal of nature conservation importance, priority habitats for the maintenance and protection of biodiversity, and the cultural and sociological values of indigenous populations.

It is better to use low environmental impact facilities which maintain, and where possible restore natural habitat. These may be within areas of high nature conservation interest and consequently require soft engineering solutions, such as providing simple staging jetties and mooring piles which allow the natural evolution of the habitat to continue unimpeded.

Sites which offer the most favourable opportunities for sustainable development should be prioritized and protected by planning control procedures, including the necessary landward access, when planning for nautical tourism at national and regional level, within the overall plan for integrated coastal zone management.

Development proposals for marinas, small ship harbours and boatyards should be submitted to the Administration at the conceptual stage, so that the environmental sustainability parameters can be determined and established. This will assist in providing the scoping document for an environmental impact assessment (EIA) and advising at the design stage for the development.

Breakwaters, slipways and jetties which project seaward of high-water mark, especially around highly mobile shorelines, will require the coastal geo-morphological effects to be considered as part of the EIA. Where sedimentary processes are interrupted, designs will need to be formulated which mitigate this effect, such an open structure which allows current patterns to continue largely unchanged.

Locations where sedimentation is high and which are likely to require constant maintenance dredging of the navigable channel or the harbour basin are likely to be unsuitable, particularly as sediment may contain highly toxic substances from anti-fouling applied to ship hulls.

Back excavation of the harbour basin into redundant coastal land of low economic or environmental value is a useful way of preventing damage to the natural processes of the ecosystem. Sites which could offer these opportunities should be identified and reserved within the overall coastal zone development plan. Also sites of existing but derelict infrastructure offer imaginative opportunities for re-use for marinas, small boat harbours and boatyards.

Prioritize developments which can be accomplished symbiotically with wildlife habitat restoration and improvement, especially mangrove and similar wetlands.

Safety of navigation considerations should be paramount when locating installations around the coast, bearing in mind the local congestion of recreational craft, the level of seamanship skill of target users and the proximity to commercial ports and shipping channels, and to underwater obstructions.

Plan carefully for the disposal and environmental burden from waste caused by marinas, small ship harbours and boatyards which often substantially exceed that for commercial shipping. Where such developments are the dominant element of small coastal communities, the scale of the development needs to be carefully considered in relation to the capabilities for properly handling the environmental pressure ashore, especially seasonal surges in demand.

Small-scale facilities located at a greater frequency around the coast will spread the environmental pressure more lightly and therefore be within the carrying capacity of the local natural ecosystem and communities offering better amenity to users especially the disposal of wastes ashore. Promote installations which also provide for community need such as artisanal fishing vessels. However, larger facilities may allow for economies of scale in recycling and reception facilities for sewage. With larger facilities, the State may be able to declare sections of the coast environmentally sensitive and therefore closed to development. It is vital that the cumulative environmental impact is assessed at local, sub-regional and regional levels.

Take into full account the downstream effects of development when facilities for nautical tourism are being proposed. Marinas and small ship harbours expand, and extend cruising range. When established, they become a magnet for users who then disperse to anchorages and remote places which may be of high nature conservation interest creating “honey pot” destinations. These may be small uninhabited islands or communities which are incapable of accommodating the resulting environmental stress.

Nautical tourism developments requiring hard surface coastal defence works in the long term, especially if capital costs are high, need to be carefully considered in terms of future environmental effects. These may be vulnerable to sea level rise and flooding or wave action.

A clear financial plan is essential to ensure the costs of pollution prevention are accounted for, even to the point of placing an environmental bond with the Administration to pay for any cleaning up costs should a business fail or if the owner or operator does not properly undertake environmental protection measures for marinas, small ship harbour or boatyard. The pollution must always pay, not the environment.

Marinas, small ship harbours and boatyard proposals which are locally owned, locally managed and which can become an integral part of the local environment and community are preferable with the income from nautical tourism injected into the economy at that level to support local businesses and culture. This is more likely to ensure long-term commitment to environmental sustainability.

APPENDIX 5

THIS BOAT'S ENVIRONMENTAL CODE OF CONDUCT

- We never throw rubbish overboard and we secure loose items so they stay onboard

- We do not allow any oil or fuel to spill into the water, including when pumping the bilge

- We use onshore toilets where possible and try not to use our sea toilet in low tidal-flushing areas

- We navigate carefully when we see marine animals or are in sensitive areas and keep wash to a minimum

- We choose our anchoring site carefully to minimize impact on the seabed

- We use environmentally friendly products

- We recycle our everyday waste where possible

- We collect and safely dispose of wastes from maintenance, e.g., anti-fouling

Please support this Code of Conduct while on board and help keep our coasts and shores beautiful.

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