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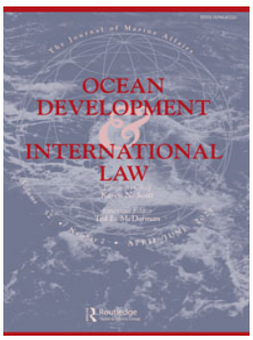

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Just a Harmless Fishing Fad—or Does the Use of FADs Contravene International Marine Pollution Law?

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ABSTRACT

Fish aggregating devices (FADs) are widely used in artisanal fisheries in the Mediterranean Sea and in tropical tuna fisheries. Thousands of FADs are lost or abandoned each year, with many causing environmental damage. This article examines whether such loss or abandonment contravenes international marine pollution law. It finds that abandonment probably constitutes "dumping" within the meaning of the international dumping regime and thus, depending on the material of which a FAD is made, is either prohibited or subject to a permit system, and that the nonaccidental loss of a FAD breaches Annex V of MARPOL. The article also considers what action may be taken against the flag states of vessels that have abandoned or lost FADs.

KEYWORDS

dumping of waste; fish aggregating devices (FADs); garbage disposal; loss of fishing gear; marine pollution; MARPOL; regional fisheries management organizations; tuna

Introduction

Many wide-ranging pelagic species have a propensity to congregate around objects floating in the sea, such as logs, dead whales, or seaweed, and remain there for days or even weeks. For many years that propensity has been exploited to a significant degree by fishers using man-made floating devices to attract fish. Such devices are known as fish aggregating (or aggregation) devices (FADs).[1] Once the number of target species around a FAD increases, catching them becomes cheaper (because less time and fuel are required) and operationally easier than pursuing free-swimming fish, and catch rates are higher.[2]

FADs are of two types: those that are anchored to the seabed (aFADs) and those that are free-floating and drift with ocean currents, often for weeks or months (dFADs). aFADs are used in both industrial fisheries (particularly in the Indian and Pacific Oceans) and artisanal fisheries (particularly in the Mediterranean and western

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[1] The Food and Agriculture Organization (FAO) Voluntary Guidelines on the Marking of Fishing Gear, available at: http://www.fao.org/3/ca3546t/ca3546t.pdf (accessed 19 May 2020), define a FAD, in para. 16(c), as "a permanent, semi-permanent or temporary object, structure or device of any material, man-made or natural, which is deployed and/or tracked and used to aggregate fish for subsequent capture." The International Commission for the Conservation of Atlantic Tunas (ICCAT) uses the same definition; see Rec. 19-02, [26(ii)], available at: https://www.iccat.int/Documents/Recs/COMPENDIUM_ACTIVE_ENG.pdf (accessed 2 December 2020).

[2] Marine Resources Assessment Group (MRAG), *PNA FAD Management Scheme. Phase 1 Report* (2018) 1, available at https://www.pnatuna.com/sites/default/files/ZN2469%20-%20PNA%20FAD%20Reports%20Consolidated.pdf (accessed 4 December 2020).

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Pacific).[3] In industrial fisheries aFADs are usually made of steel, aluminium, or fiberglass and are equipped with radar reflectors and solar-powered lights; they are often moored in deep water offshore.[4] In artisanal fisheries aFADs are usually made of simpler materials, such as cork, plastic bottles, the inner tubes of car tires, or polystyrene slabs, and are usually anchored close to the coast.[5] There are tens of thousands of aFADs deployed in the oceans. In 2014, it was estimated that there were in excess of 73,000 aFADs in use, of which around 80% were deployed by small-scale fishers in the Mediterranean Sea to catch dolphin fish; most of the remainder were deployed in the western central Pacific Ocean to catch tuna.[6]

In contrast to aFADs, dFADs typically consist of a floating raft made of wood or plastic, with ropes or synthetic netting dangling beneath to depths of up to 100 m.[7] Since the early 2000s, most dFADs have been equipped with a buoy with a satellite tracking device, which enables the parent fishing vessel to monitor their location; many have also been equipped with echo sounders, which indicate the volume of fish under a dFAD.[8] dFADs are deployed almost exclusively by vessels using purse-seine nets to catch tuna in tropical waters.[9] Such deployment began in the 1980s, and has increased substantially since the early 1990s. Information on the precise number of dFADs deployed is not available. It has been estimated that during 2013 between 81,000 and 121,000 dFADs were deployed worldwide in tropical tuna fisheries.[10] Estimates since then suggest totals of 44,000–64,000 annually in the western and central Pacific Ocean for the period 2017–2019,[11] 27,000 in the Indian Ocean during the first quarter of 2020,[12] and 18,000 and 15,000 in the Atlantic and eastern Pacific Oceans in 2014 and 2015, respectively.[13]

It appears that the majority of dFADs that are put into the sea are not eventually retrieved.[14] For example, it has been estimated that in the western and central Pacific

[3] MRAG, *An Analysis of the Uses, Impacts and Benefits of Fish Aggregating Devices (FADs) in the Global Tuna Industry* (2017) 6–7, available at wwf.org.uk/sites/default/files/publications/Mar17/Tuna%20fisheries%20FADs%20report%20-%20MRAG_WWF.pdf (accessed 19 May 2020).

[4] Ibid, 7.

[5] Ibid. See also M. Sinopoli T. Cillari, F. Andaloro, et al., "Are FADs a Significant Source of Marine Litter? Assessment of Released Debris and Mitigation Strategy in the Mediterranean Sea" (2020) 253 *Journal of Environmental Management* 109749.

[6] European Parliament, G. P. Scott and J. Lopez, *The Use of FADs in Tuna Fisheries* (2014) 41–44, available at europarl.europa.eu/thinktank/en/document.html?reference = IPOL-PECH_NT(2014)514002 (accessed 19 May 2020).

[7] Pew Charitable Trusts, D. Gershman, A. Nickson, and M. O'Toole, *Estimating the Use of FADs around the World* (2015) 1, available at pewtrusts.org/~/media/assets/2015/11/global_fad_report.pdf (accessed May 19, 2020); and Q. Hanich, R. Davis, G. Holmes, et al., "Drifting Fish Aggregating Devices (FADS): Deploying, Soaking and Setting——When Is a FAD "Fishing"?" (2019) 34 *International Journal of Marine and Coastal Law* 731, 734–735.

[8] T. K. Davies, C. C. Mees, and E. J. Milner-Gulland, "The Past, Present and Future Use of Drifting Fish Aggregating Devices (FADs) in the Indian Ocean" (2014) 45 *Marine Policy* 163, 163–164; Hanich, Davis, Holmes, et al., ibid, 733–734.

[9] MRAG, note 3, 6.

[10] Gershman, Nickson, and O'Toole, note 7, 1 and 13. Other global estimates are 91,000 (Scott and Lopez, note 6, 12) and 100,000–108,000 in 2015 (MRAG, note 3, 6).

[11] R. Banks and M. Zaharia, *Characterization of the Costs and Benefits Relevant to Lost and/or Abandoned Fish Aggregating Devices in the Western and Central Pacific Ocean* (2020), 1, available at: https://www.consult-poseidon.com/fishery-reports/Poseidon_Pew1514_FAD%20final%20report_270120.pdf (accessed 2 December 2020).

[12] Indian Ocean Tuna Commission (IOTC), *Summary Overview of Buoy Data Submitted to the IOTC Secretariat for the Period January–July 2020*, Doc. IOTC-2020-WPDCS16-17 (2020) 3, available at: https://www.iotc.org/fr/documents/WPDCS/16/17 (accessed 27 November 2020).

[13] Greenpeace, *Ghost Gear: The Abandoned Fishing Nets Haunting Our Oceans* (2019) 10, available at: https://issuu.com/greenpeaceinternational/docs/ghost_fishing_gear_report_en_single_page_051119 (accessed 4 December 2020).

[14] Gershman, Nickson, and O'Toole, note 7, 15. See also S. D. Balderson and L. E. C. Martin, *Environmental Impact and Causation of 'Beached' Drifting Fish Aggregating Devices around Seychelles Islands*, Doc. IOTC-2015-WPEB11-39 (2015), available at: https://iotc.org/documents/environmental-impacts-and-causation-%E2%80%98beached%E2%80%99-drifting-

Ocean (which accounts for nearly 40% of the total number of dFADs deployed worldwide) only around 10% of dFADs were retrieved by the deploying vessel during the period 2016–2020.[15] Different writers, generally nonlawyers, use differing terminology to refer to dFADs that are not retrieved. From the point of the legal analysis with which this article is concerned, two categories of nonretrieval may be distinguished. The first is when the owner/master of a fishing vessel attempts to retrieve a dFAD but fails to do so, for example, because the FAD has sunk or the satellite tracking buoy is no longer functioning properly. Such nonretrieval will be referred to hereafter as the "loss" of a dFAD. The second category is where the owner/master has no intention of retrieving a dFAD, because, for example, it regards the cost of, and time spent, attempting to do so as excessive,[16] or it has switched the satellite tracking device off and left the dFAD to drift. This second category of nonretrieval will be referred to as "abandonment."

Depending on their design and the material of which they are made, lost and abandoned dFADs may have various adverse environmental effects. They include ghost fishing; entanglement with marine life (particularly sharks and turtles); acting as habitat for the spread of invasive species; and washing ashore on beaches or stranding on reefs as marine litter and causing harm to sensitive habitats, such as seagrass beds and coral reefs.[17] Many lost or abandoned dFADS sink, thereby also potentially causing environmental harm, for example, to seamounts or deep-sea chemosynthetic communities.[18] As long as they remain anchored, aFADs will not cause significant environmental harm. However, a recent study found that most aFADs deployed in the Mediterranean Sea are lost or destroyed by adverse winter weather, washing up on beaches as litter. During the period 1961–2017, nearly 1.5 million aFADs are estimated to have suffered this fate.[19] This will also be referred to as "loss."

The UN Convention on the Law of the Sea (UNCLOS) defines marine pollution as:

> the introduction by man, directly or indirectly, of substances or energy into the marine environment, including estuaries, which results or is likely to result in such deleterious effects as harm to living resources and marine life, hazards to human health, hindrance to

fish-aggregating-devices-around (accessed 27 November 2019); Greenpeace, *Coastal Management Issues Associated With Activities to Prevent Marine Pollution. Background Information on Use of Drifting Fish Aggregating Devices (FADs) and Their Contribution to Marine Litter*, Doc. LC/SG38/8/1 (6 March 2015) Annex 1, 1 and 4–5, available in the (restricted) documents section of the website of the International Maritime Organization (IMO); and G. Macfadyen, T. Huntington, and R. Cappell, *Abandoned, Lost or Otherwise Discarded Fishing Gear*, FAO Fisheries and Aquaculture Technical Paper No. 523 (2009) 23, available at: http://www.fao.org/3/i0620e/i0620e00.htm (accessed 19 May 2020).

[15] L. Escalle, B. Muller, S. Hare, et al., *Report on the Analyses of the 2016/2020 PNA FAD Tracking Programme*, Doc. WCPFC-SC16-2020/M1-IP-14 (2020) 3, available at: https://www.wcpfc.int/node/46713 (accessed 27 November 2020).

[16] See Parties to the Nauru Agreement (PNA), *Tuna Market Intelligence No. 56* (2017) 3, available at pnatuna.com/marketintel56 (accessed May 19, 2020); and Gershman, Nickson and O'Toole, note 7, 15.

[17] Balderson and Martin, note 14; Gershman, Nickson and O'Toole, note 7, 3 and 15; Greenpeace, note 14, 1–3; Greenpeace, *Time to Deliver Precautionary Tuna Fisheries Management*, Briefing Paper for the 20th Annual Meeting of the Indian Ocean Tuna Commission (2016), available at: https://iotc.org/documents/greenpeace-position-statement-2016 (accessed 27 November 2020); and K. Richardson, D. Haynes, A. Talouli, et al., *Marine Pollution Originating From Purse Seine and Longline Fishing Vessels Operations in the Western and Central Pacific Region, 2003–2015*, Doc. WCPFC-TCC11-2015-OP06 (2015) 23, available at: https://www.wcpfc.int/node/26867 (accessed 19 May 2020). It is estimated that annually about 10% of FADs beach in the Atlantic and Indian Oceans, and around 20% in the western and central Pacific Ocean; see, respectively, Greenpeace, note 14, 10, and Banks and Zaharia, note 11, 1.

[18] Banks and Zaharia, note 11, 2. The authors estimate that around two-thirds of dFADs in the western and central Pacific sink each year.

[19] Sinopoli, Cillari, Andaloro, et al., note 5.

> marine activities, including fishing and other legitimate uses of the sea, impairment of quality for use of sea water and reduction of amenities.[20]

The deployment of FADs clearly falls within this definition. FADs are "substances" that are introduced into the marine environment and are likely to result in "deleterious effects" such as "harm to living resources and marine life" and "reduction of amenities" (in the case of FADs washed up on tourist beaches). Not all acts that constitute marine pollution as defined by UNCLOS necessarily violate international law. For reasons that are explained later, the deployment of FADs that are retrieved is not illegal. However, the deployment of a FAD that is lost or abandoned may be contrary to international law. The aim of this article is to ascertain whether that is so by examining the two bodies of international marine pollution law that are relevant in this context, namely, the international regime governing the dumping of waste at sea and the International Convention for the Prevention of Pollution from Ships (MARPOL).[21] While this question has been discussed to some degree in the literature, mainly by nonlawyers, such discussion has been brief.[22] To the writer's knowledge, the present article is the first systematic and sustained legal analysis of the question.

FADs and the International Regime Governing the Dumping of Waste at Sea

Since the early 1970s an international regime to control and limit the dumping of waste at sea has been developed. This regime has four components. The first is the Convention on the Prevention of Marine Pollution by the Dumping of Wastes and Other Matter (the London Convention).[23] The Convention prohibits the dumping of the most noxious kinds of waste and requires the prior issuing of a permit for the dumping of all other kinds of waste. The second component is the Protocol to the London Convention (the London Protocol).[24] As between its parties, the Protocol replaces the London Convention and for them is effectively a new and separate treaty. The Protocol adopts the so-called reverse listing approach. It thus prohibits the dumping of all wastes except those that are expressly permitted. Nevertheless, the dumping of such permitted wastes is subject to obtaining a permit. When the Protocol was adopted, it was hoped that all the parties to the London Convention would in time become parties to the Protocol, thereby making the Convention defunct. However, that has not (yet) happened. As of November 2020, around 40 of

[20] United Nations Convention on the Law of the Sea, adopted 10 December 1982, entered into force 16 November 1994, 1833 UNTS 397, Art 1(1)(4).

[21] International Convention for the Prevention of Pollution from Ships, adopted 2 November 1973, entered into force 2 October 1983, 1340 UNTS 62.

[22] See, for example, T. Davies, D. Curnick, J. Barde, et al., *Potential Environmental Impacts Caused by Beaching of Drifting Fish Aggregating Devices and Identification of Management Solutions and Uncertainties* (2017) 8, available at: https://iotc.org/documents/potential-environmental-impacts-caused-beaching-dfads-and-identification-management (accessed 19 May 2020); Hanich, Davis, Holmes, et al., note 7, 750–753; and MRAG, note 3, 18.

[23] Convention on the Prevention of Marine Pollution by the Dumping of Wastes and Other Matter, adopted 29 December 1972, entered in force 30 August 1975, 1046 UNTS 138.

[24] Protocol to the London Convention, adopted 7 November 1996, entered into force 24 March 2006, (2007) 36 ILM 1.

the Convention's 87 parties had not ratified the Protocol. It is not clear why they have not done so.

The third component of the international dumping regime is the UNCLOS. It contains no substantive provisions relating to dumping. Instead, it applies the provisions of other treaties concerned with dumping to its parties through so-called rules of reference. Thus, Article 210 requires all parties to UNCLOS to adopt laws to control dumping that are "no less effective in preventing, reducing and controlling pollution [from dumping] than the global rules and standards." That raises the question of what those "global rules and standards" are. They would certainly seem to include the rules of the London Convention. It might be objected that since the Convention has only 87 parties, less than half the total number of states, its provisions cannot be said to be "global." However, that objection has little force. First, unlike some other rules of reference in UNCLOS, Article 210 does not contain the qualification that "global rules" must be "generally accepted." Second, a significant number of states do not engage, or have an interest, in the dumping of waste at sea and therefore have no incentive to ratify the Convention. Thus, the number of ratifications should not, on its own, be determinative as to whether the rules of the Convention are "global." Third, if "global rules" did not include the London Convention, which was adopted well before UNCLOS was drafted, that would have made Article 210 devoid of practical effect since it is difficult to see to what else "global rules" could have referred.

Whether "global rules" also include the London Protocol is less straightforward. It could be argued that they do not on the ground that if they did, the significant number of states parties to the London Convention that were also parties to UNCLOS but had chosen not to ratify the Protocol would have to adopt national laws that were as effective as the provisions of the Protocol. However, if a state chooses to ratify UNCLOS, it has to accept the consequences of the rules of reference therein, including the possibility that such rules may develop over time. It is also relevant that the London Protocol was adopted under the auspices of the International Maritime Organization (IMO), the UN's specialized agency for shipping, with the expectation that it would eventually replace the Convention. While the matter is not free from doubt, a plausible case may be made that the rules of the London Protocol are included in the category of "global rules" referred to in Article 210 of UNCLOS.[25]

The fourth component of the international dumping regime is treaties that regulate dumping at the regional level. There are currently five such treaties. Of those, only two apply to areas where FADs are deployed in significant numbers, one to the Mediterranean Sea and the other to the South Pacific.[26] To a large extent the two treaties duplicate the London Convention. Although each has been amended to bring it

[25] The same view is taken by L. de La Fayette, "The London Convention 1972: Preparing for the Future" (1998) 13 *International Journal of Marine and Coastal Law* 515, 516; and F. Wacht, "Article 210" in A. Proelss (ed.), *United Nations Convention on the Law of the Sea: A Commentary* (C. H. Beck, 2017) 1407, 1418. Harrison, on the other hand, considers that the provisions of the Protocol should not be considered "global rules" until "the vast majority" of states parties to the Convention have become parties to the Protocol; see J. Harrison, *Saving the Oceans through Law: The International Legal Framework for the Protection of the Marine Environment* (Oxford University Press, 2017) 110.

[26] Protocol for the Prevention of Pollution of the Mediterranean Sea by Dumping from Ships and Aircraft, adopted 16 February 1976, entered into force 12 February 1978, 1102 UNTS 92; and Protocol for the Prevention of Pollution of the South Pacific Region by Dumping, adopted 24 November 1986, entered into force 22 August 1990, (1987) 26 ILM 41.

into line with the London Protocol, those amendments have not (yet) entered into force. Because the two regional treaties add nothing of significance to the three global treaties, they are not considered further here.

Virtually all states involved in the deployment of FADs—whether as flag states, coastal states, or states where FADs are loaded on to vessels for deployment at sea—are parties to one or more of the London Convention, London Protocol, or UNCLOS. The main exception is Taiwan, which because of its unique international legal status is unable to become a party to any of those treaties. Taiwanese vessels account for around 10–15% of all catches of tuna taken by purs-seine vessels,[27] and therefore may be assumed to be significant users of dFADs.

Having introduced the components of the international dumping regime, the questions now to be considered are (1) whether the loss or abandonment of a FAD falls within the scope of the regime, and (2) if so, what legal consequences follow?

Does the Loss or Abandonment of a FAD Fall within the Scope of the International Dumping Regime?

The international dumping regime applies to the "dumping" of "waste or other matter."[28] Thus, to determine whether the loss or abandonment of a FAD falls within the scope of the regime, it is necessary to consider whether a FAD may be considered "waste or other matter" within the meaning of the regime; and if so, whether its loss or abandonment constitutes "dumping" as defined by the regime.

As regards the first issue, "wastes or other matter" is defined in the London Convention and Protocol as "material and substance of any kind, form or description."[29] That is a very wide definition and includes FADs. UNCLOS does not define "wastes or other matter," but given that its definition of "dumping" is virtually identical to that of the London Convention, it is reasonable to assume that "wastes or other matter" has the same meaning in UNCLOS as in the Convention.

The next question is whether the loss or abandonment of a FAD constitutes "dumping." Article III(1) of the London Convention, Article 1(4) of the London Protocol, and Article 1(5)(a) of UNCLOS define dumping as "any deliberate disposal at sea [the Protocol has 'into the sea'] of wastes or other matter from vessels." The requirements that disposal is "at sea" (or "into the sea") and is from a "vessel" are clearly satisfied. That leaves the questions of whether the loss or abandonment of a FAD constitutes "disposal" and if so, whether that disposal is "deliberate." The term "disposal" is not defined in the Convention, Protocol, or UNCLOS. According to Article 31(1) of the Vienna Convention on the Law of the Treaties (VCLT),[30] a treaty is to be interpreted "in accordance with the ordinary meaning to be given to the terms of the treaty in their context and in the light of its object and purpose." The "ordinary meaning" of a provision is usually that given in dictionaries. The latter lists quite a

[27] MRAG, note 3, 7.

[28] Cf. the full titles of the London Convention and London Protocol, and the provisions setting out the basic obligations of their parties in Article I of the Convention and Articles 2 and 4 of the Protocol.

[29] Article III(4) of the Convention; Article 1(8) of the Protocol.

[30] Vienna Convention on the Law of Treaties, adopted 22 May 1969, entered into force 27 January 1980, 1155 UNTS 331.

range of meanings of "disposal." The meaning that is probably intended here is "the act of getting rid of."[31] That probably also accords with the "context" of the three treaties, as the use of the term "disposal" elsewhere in the Convention, Protocol, and UNCLOS would appear to mean "getting rid of."

If "disposal" means "the act of getting rid of," the next question is whether any aspects of the placement of a FAD in the sea fall within that phrase. Where a vessel places a dFAD in the sea and later retrieves it, it is obviously not getting rid of it and is therefore not engaged in "disposal." On the other hand, both the loss and abandonment of a FAD would seem to amount to getting rid of it and therefore do constitute "disposal." However, such disposal will not fall within the definition of "dumping" unless it is "deliberate." That term is also not defined by the Convention, Protocol, or UNCLOS. Applying Article 31(1) VCLT again, the "ordinary meaning" of "deliberate" suggested by dictionaries is "intentional." The context and object and purpose do not offer further guidance on this point. Assuming that "deliberate" means "intentional," it would appear to follow that the loss of a FAD is not "deliberate," whereas its abandonment clearly is. Thus, only the abandonment of a FAD, which in practice happens only with dFADs, constitutes "dumping" under the definition of dumping in Article III(4) of the London Convention, Article 1(4) of the London Protocol, and Article 1(5) of UNCLOS.

That is not the end of the matter, however, as the treaties list a number of acts that do not constitute "dumping" for the purposes of the international regime, even though they may appear to fall within the regime's definition of that term. For simplicity, the matters covered by this list will be referred to as exceptions. The first exception relevant to the abandonment of FADs is "the disposal at sea of wastes or other matter incidental to, or derived from the normal operations of vessels."[32] Historically, the main reason for this exception was to avoid an overlap, and potential conflict, with the 1954 Oil Pollution Convention,[33] the predecessor to MARPOL.[34] The 1954 Convention permitted the discharge of oily waste from oil tankers under certain conditions while en route. Without the exception, such discharges, which were incidental to the normal operation of a tanker, would have constituted dumping under the London Convention and therefore would have been subject to its provisions. Whether the exception also applies to the abandonment of dFADs is less certain. The question is whether such abandonment can be said to be "incidental to, or derived from the normal operations" of a fishing vessel. The "normal operations" of a fishing vessel are navigating to a fishing ground and fishing there. The terms "incidental to" and "derived from" are not defined in the London Convention or Protocol. The abandonment of a dFAD could probably not be described as "incidental" to the "normal operations" of a fishing vessel, given the

[31] This definition is taken from Chambers English Dictionary and the Oxford English Dictionary.

[32] Article III(1)(b)(i) of the Convention, Article 1(4)(b)(i) of the Protocol.

[33] International Convention for the Prevention of Pollution of the Sea by Oil, adopted 12 May 1954, entered into force 26 July 1958, 327 UNTS 3.

[34] See President of the USA, Letter of Transmittal of the London Convention to the Senate (1973), vi, available at: https://www.gc.noaa.gov/gcil_mp_ocean_dumping.html (accessed May 19, 2020); IMO Secretariat, *The London Dumping Convention: The First Decade and Beyond* (1990) 17 (which refers to the exception as covering "operational discharges"); C. C. Joyner and S. Frew, "Plastic Pollution in the Marine Environment" (1991) 22 *Ocean Development and International Law* 33, 42; and T. L. Leitzell, "The Ocean Dumping Convention—A Hopeful Beginning" (1973) 10 *San Diego Law Review* 502, 505.

number of abandonments and their intentional nature. Whether it could be considered to be "derived" from such operations is less certain. In a sense the abandonment of a FAD could be said to be "derived" from the "normal operations" of a fishing vessel deploying FADs. Nevertheless, had the drafters of the London Convention known of the practice of extensively using and often deliberately abandoning FADs that was to develop two decades after the Convention was adopted, it is perhaps doubtful whether they would have intended a deliberately abandoned FAD to fall within the exception. Furthermore, it is a general rule of treaty interpretation that exceptions to general rules should be applied restrictively. That also argues against permitting the abandonment of FADs to fall within the exception.

The second exception is "placement of matter for a purpose other than the mere disposal thereof, provided that such placement is not contrary to the aims of" the Convention or Protocol.[35] To fall within this exception, an act must therefore satisfy two conditions. First, it must involve the placement of matter in the sea for a purpose other than its mere disposal. Second, such placement must not be contrary to the aims of the Convention/Protocol. There is considerable uncertainty as to the meaning and scope of the first of these conditions. The matter was discussed at meetings of the parties to the London Convention (Consultative Meetings) between 2000 and 2005. It was agreed that placement under this exception should not be used as an excuse for the disposal at sea of waste. Beyond that, no further agreement on guidance as to the meaning of this second exception could be reached.[36] Subsequently, there has been discussion at the Consultative Meetings as to the application of the second exception to specific activities, notably, ocean fertilization and artificial reefs, but those discussions do not really help in establishing the meaning or scope of the exception. The IMO Secretariat has suggested that the exception is intended to cover such activities as the placing of scientific equipment and aquaculture installations in the sea.[37]

In trying to determine whether the second exception applies to the abandonment of a FAD, the first question is whether an abandoned FAD is placed in the sea "for a purpose other than the mere disposal thereof." While the initial placement of a FAD in the sea is not for the purpose of disposing of it, once a vessel has decided not to retrieve the FAD, the purpose of placing the FAD in the sea has changed to one of disposal. It would create a significant loophole in the Convention and Protocol if the second exception were interpreted so as to permit a person to place an object in the sea where the initial purpose was not disposal, even though all along it was that person's intention ultimately to dispose of the object at sea once its initial purpose had been fulfilled, or where that intention developed during the initial deployment of the object in the sea.

[35] Article III(1)(b)(ii) of the Convention, Article 1(4)(b)(ii) of the Protocol.

[36] See the following reports of the Consultative Meetings: 22nd meeting (2000), 19–20; 23rd meeting (2001), 27–28; 24th meeting (2002), 24–25; 25th meeting (2003), 24–26; 26th meeting (2004), 23–24; and 27th meeting (2005), 27–29. These reports, like other documents relating to the Convention and Protocol referred to in the following, are available in the documents section of the IMO's website; because access to this part of the site requires prior registration, no URL is given. See also A. B. Sielen, "The New International Rules on Ocean Dumping: Promise and Performance" (2009) 21 *Georgetown International Environmental Law Review* 295, 311–312.

[37] IMO Secretariat, note 34, 17. Similarly, Leitzell, note 34, 5, suggests that the exception is designed to deal with the situation where objects such as environmental monitoring devices are placed on the seabed and "may not be intended for recovery." No authority is given for that statement.

Thus, a strong argument can be made that the abandonment of a FAD does not satisfy the first condition of the exception. Even if it did, it would still have to satisfy the second condition, namely, that placement of an object in the sea is not contrary to the aims of the Convention or Protocol. Those aims are, respectively, to improve protection of the marine environment and "to protect the marine environment and to promote the sustainable use and conservation of marine resources."[38] Given the adverse environmental impacts of lost and abandoned FADs outlined earlier,[39] abandonment of a FAD should be regarded as being contrary to the aims of the Convention and Protocol. Overall, therefore, a strong case can be made that the abandonment of a FAD does not fall within the second exception to dumping.

The London Convention contains only the two exceptions just discussed, but the London Protocol adds a third exception. This is the "abandonment in the sea of matter (e.g. cables, pipelines and marine research devices) placed for a purpose other than the mere disposal thereof."[40] The scope of this exception is not clear. The quoted phrase is preceded by the words "notwithstanding paragraph (4)(a)(iv) [of Article 1]." The latter paragraph provides that the abandonment or toppling of platforms and other man-made structures at sea for the sole purpose of deliberate disposal constitutes dumping. The "notwithstanding" phrase might suggest that the term "matter" in this third exception refers to matter connected with platforms and man-made structures. However, that is really only true of the second of the three examples given of "matter," namely, pipelines. Cables and research devices rarely relate to platforms and structures. It is not clear what the policy rationale for the third exception is or how it is intended to differ from the second exception. Nevertheless, given the aims of the Protocol, there is a case for interpreting "matter" restrictively and limiting it to the three examples given and to objects closely connected therewith, and for regarding the purpose of the exception as to exclude from the definition of "dumping" abandoned matter that before its abandonment had a use that was beneficial to the community at large and not harmful to the marine environment. Such an interpretation would exclude the abandonment of FADs, with their potential to cause significant environmental harm, from the scope of this third exception.

The conclusion from the preceding discussion is that the retrieval or loss of a FAD does not constitute "dumping" within the meaning of the London Convention and London Protocol, and thus falls outside the scope of those treaties and is not regulated by them. In contrast, although the matter is not wholly free from doubt, the abandonment of a FAD does constitute "dumping" and thus falls within the scope and regulatory provisions of both the Convention and Protocol, as well as the provisions of UNCLOS relating to dumping. There is support for that conclusion from the practice of the institutions of the London Convention and Protocol. First, at its 2018 session, the meeting of the parties to the Convention and Protocol, in considering the IMO's Action Plan on Marine Litter (referred to in the following), noted that "dumping of fishing

[38] London Convention, preamble, first three recitals; London Protocol, preamble, 1st recital: see also 8th recital and Articles 2 and 3.
[39] See text at notes 17–19.
[40] Protocol, Art 1(4)(b)(iii).

gear was in contravention of LC/LP."[41] Second, at their meeting in 2019, the Scientific Groups instructed the secretariat to issue a circular inviting states parties to provide information on their (possible) source control options to reduce the presence of marine litter in LC/LP waste streams on, inter alia, "discarded" FADs.[42]

Having determined that the abandonment of FADs probably constitutes dumping, the next question is what consequences follow from that finding. As noted earlier, in practice, only dFADs are abandoned. Thus, the discussion that follows relates only to dFADs, and not aFADs.

What Legal Consequences Follow from the Finding that the Abandonment of FADs Falls within the Scope of the International Dumping Regime?

The consequences that follow from the finding that the deliberate abandonment of dFADs falls within the scope of the London Convention, the London Protocol, and UNCLOS differ significantly between the three treaties. Each is therefore considered separately. In the case of the London Convention, Article IV prohibits the dumping of the particularly noxious substances listed in Annex I (the so-called black list). The dumping of the somewhat less harmful substances listed in Annex II (the so-called gray list) is only permitted if a prior special permit has been obtained, while the dumping of all other substances requires a prior general permit. The only substances on the black list that appear to be potentially relevant to FADs are "persistent plastics and other persistent synthetic materials, for example, netting and ropes, which float or remain in suspension in the sea in such a manner as to interfere materially with fishing, navigation or other legitimate uses of the sea." As noted earlier, dFADs often have a plastic float and have synthetic netting or ropes suspended beneath them. They may also interfere with "navigation" and possibly with "other legitimate uses of the sea," although whether such interference is "material" is debatable. Where interference is considered to be material, and the FAD concerned is constructed of the proscribed materials, its dumping, that is, abandonment, is therefore prohibited. The only substances on the gray list that appear potentially relevant to FADs are "materials which, though of a non-toxic nature, may become harmful due to the quantities in which they are dumped, or which are liable to seriously reduce amenities." While abandoned FADs are unlikely to "become harmful due to the quantities in which they are dumped," they could possibly be "liable to seriously reduce amenities," for example, when washed up on to tourist beaches. In such cases, a vessel that intended to abandon a FAD would require a prior special permit. If a FAD did not contain any material on the black or gray lists, the vessel intending to abandon it would require a prior general permit.

Under Article VI(2)(a) of the London Convention, permits are to be issued by the state in whose territory "the matter intended for dumping" is to be loaded (the state of loading). The Convention does not stipulate that a vessel intending to load matter that

[41] *Report of the Fortieth Consultative Meeting and Thirteenth Meeting of Contracting Parties* (2018), [9.51]. As seen earlier (when discussing the FAO's Voluntary Guidelines on the Marking of Fishing Gear), and as will be seen again in the following (when discussing MARPOL), FADs are considered to be "fishing gear."

[42] *Report of the Forty-Second Meeting of the Scientific Group of the London Convention and the Thirteenth Meeting of the Scientific Group of the London Protocol* (2019), [8.25].

requires a permit has to have the nationality of a state party to the Convention, so it would seem that the state of loading is required to issue a permit to any vessel loading matter that is intended for dumping, regardless of that vessel's nationality. Where the state of loading is not a party to the Convention, a permit is to be issued by the flag state if it is a party to the Convention (Article VI(2)(b)). Where neither the state of loading nor the flag state is a party to the Convention, the Convention does not apply to the vessel concerned.

The application of these provisions to vessels loading FADs is not straightforward. The state of loading will be the state where a fishing vessel takes a FAD on board. For Article VI(2)(a) to operate effectively, the state of loading needs to know whether a vessel loading a FAD in one of its ports intends eventually to abandon it. It is difficult to see how the state of loading can know what the intention of the vessel is. It can ask the master, but it may not receive an honest reply. Where a vessel is known to have a history of deliberately abandoning FADs, it is reasonable for the state of loading to assume that the vessel will do so again and thus require it to have a permit. The most straightforward way for the state of loading to be sure that it complies with its obligations under Article VI(2) is for it to require all vessels loading FADs in its ports to obtain a prior permit. It will also need to check what each FAD is made of. If a FAD contains matter on the black list, the state of loading must prohibit the vessel concerned from taking the FAD on board. If a FAD contains matter on the gray list, the state of loading must issue a special permit. Otherwise, it must issue a general permit. Annex III of the Convention sets out various factors that the state of loading must carefully consider before issuing a special or general permit. They include the characteristics and composition of the matter to be dumped, the characteristics of the proposed dumping site, and the possible effects of the dumping. The second and third of these factors are not easy to apply in the case of FADs.

Where the state of loading is not a party to the London Convention but the flag state of a vessel deploying FADs is, the issuing of permits becomes the flag state's responsibility. Again, the situation is not straightforward. A flag state needs to know in which states its fishing vessels are loading FADs, and whether those states are parties to the Convention. Discovering the former is likely to be difficult, especially if the flag state is a flag of convenience with limited oversight over its vessels. Where a flag state is aware of its vessels loading FADs in states that are not parties to the London Convention, it faces similar difficulties to the state of loading in determining whether it should be issuing permits.

Whether states of loading or flag states in practice generally, or indeed ever, issue permits to vessels deploying FADs is unclear. The fact that the issue of such permits appears never to be mentioned in Consultative Meetings of the London Convention might suggest that states of loading and flag states do not generally issue permits. However, no real conclusions can be drawn from the lack of such mention, as compliance by states parties with their obligation under Article VI(4) of the Convention annually to report details of the permits that they have issued to the IMO has been poor.[43]

[43] For example, in 2015, only 35% of the parties reported as required; see *Report*, note 41, [7.3].

Articles II, IV(1), and VII(1) and (2) of the London Convention require states parties to make the provisions of the Convention that are intended to govern the conduct of nonstate actors part of their national law. That is important as the Convention, like all treaties, does not bind nonstate actors, such as the owners, operators, and masters of fishing vessels. The Convention also imposes obligations on its parties to enforce its provisions regulating dumping against nonstate actors via its national laws. Article VII(2) provides that each party to the Convention "shall take in its territory appropriate measures to prevent and punish conduct in contravention of the provisions" of the Convention. This provision would seem to have the following implications as far as fishing vessels deploying FADs are concerned. First, the state of loading must prevent a vessel leaving its ports if it reasonably suspects it of subsequently intending to abandon a FAD loaded in its ports that either contains plastic material on the Convention's black list or for which there is no permit. Second, if a vessel returns to a port in the state of loading after engaging in conduct prohibited by the Convention with respect to a FAD loaded in that state, the latter must institute criminal or administrative proceedings against the vessel if it has sufficient evidence to do so.[44] Third, the flag state, regardless of whether it issued, or should have issued, a permit, must institute criminal or administrative proceedings against a vessel having its nationality where it has adequate evidence that the vessel has acted contrary to the Convention, unless the state of loading has already taken action. The latter qualification reflects a general principle of international human rights law that a person may not be tried or punished twice for the same offense.[45] In addition, Article VII(1)(c) of the Convention stipulates that a state must apply its provisions to any vessel believed to be dumping waste in any maritime areas where it exercises jurisdiction. Thus, such a state, that is, the coastal state, must institute proceedings against a vessel deliberately abandoning a FAD in a way that is contrary to Convention in any such areas. Articles 210(5) and 216(1)(a) of UNCLOS clarify that those areas are the territorial sea, exclusive economic zone (EEZ), and continental shelf.

The obligations of enforcement just outlined are not absolute ones. In two advisory opinions, the International Tribunal for the Law of the Sea (ITLOS) has held that where a state is required to ensure that nonstate actors comply with the rules of a particular treaty, the obligations on that state are ones of due diligence.[46] Thus, a failure by the state of loading to prevent the departure from one of its ports of a vessel carrying a FAD made of prohibited material or without a required permit or to take proceedings against the vessel where it had abandoned a FAD would not necessarily represent a breach of the Convention's enforcement obligations. It would depend on whether that state had exercised due diligence to prevent such a departure or detect the abandonment. According to the ITLOS, the obligation of due diligence requires a state to deploy adequate means and to exercise best possible efforts to prevent the breach in question.

[44] Reference is made to administrative proceedings as an alternative to criminal proceedings because some states sanction regulatory offenses through administrative, rather than criminal, proceedings and penalties.

[45] This principle is found, for example, in Article 14(7) of the International Covenant on Civil and Political Rights, adopted 16 December 1966, entered into force 23 March 1976, 999 UNTS 171.

[46] *Responsibilities and Obligations of States with Respect to Activities in the Area*, Advisory Opinion of 1 February 2011, ITLOS Reports 2011, pp. 41–44 [110–120]; and *Request for an Advisory Opinion Submitted by the Sub-Regional Fisheries Commission*, Advisory Opinion of 2 April 2015, ITLOS Reports 2015, p. 40 [129].

That is particularly relevant to abandonment because it will be extremely difficult for the state of loading, flag state, or coastal state, as the case may be, to obtain adequate evidence of an offense. Recent measures adopted by the four regional fisheries management organizations (RFMOs) that have responsibility for tropical tuna fisheries may aid detection of an offense and the acquisition of evidence. All four RFMOs require purse-seine vessels to carry observers on board.[47] Such observers may be able to detect breaches of the London Convention. Indeed, the WCPFC require observers to compile reports on the disposal of dFADs.[48] In addition, all four RFMOs require a dFAD and/or its buoy to carry unique identification markings that must be notified to the flag state.[49] Thus, if a dFAD is washed up on a beach or reef, the coastal state should be able to identify the vessel that lost or abandoned the dFAD, although it will probably not be able to deduce whether it is a case of loss or abandonment.

The position under the London Protocol differs in some significant ways from that just described under the London Convention. The Protocol prohibits the dumping of all matter except that listed in Annex I. The only matter in that list that could apply to FADs is "organic material of natural origin." This would include, for example, FADs made of wood. If a FAD does not consist of "organic material of natural origin," and it appears that at the present time most do not,[50] its dumping (i.e., abandonment) is prohibited under Article 4. A FAD that does consist of such material may be dumped, but only if a prior permit has been obtained. The state that is to the issue the permit, that is the state of loading, or the flag state if the state of loading is not a party to the Protocol, must comply with the conditions set out in Annex II to the Protocol before issuing the permit. As with the London Convention, states parties to the London Protocol are required to make its provisions that are intended to govern the conduct of nonstate actors part of their national law.[51] The provisions of the Protocol setting out the enforcement obligations of its parties (in Article 10) are similar to those of the London Convention.

Finally, turning to UNCLOS, Article 210(5) provides that a vessel may dump matter within the territorial sea, EEZ, or "onto the continental shelf" of a state only with the express prior approval of that state, which "has the right to permit, regulate and control such dumping after due consideration with other states which by reason of their geographical situation may be adversely affected thereby." The effect of this provision is that a vessel intending to abandon a FAD within the territorial sea, EEZ, or continental

[47] See, respectively, IOTC Res. 11/04, available at: https://iotc.org/cmms (accessed 2 December 2020); Article XIII and Annex II of the Agreement on the International Dolphin Conservation Program, adopted 21 May 1998, entered into force 15 February 1999, available at: https://iattc.org/IDCPENG.htm (accessed 19 May 2020) (scheme of the Inter-American Tropical Tuna Commission (IATTC)); ICCAT Rec. 19-02, note 2, [58] and Annex 7; and West and Central Pacific Fisheries Commission (WCPFC) CMM 2018-01, available at: https://www.wcpfc.int/system/files/booklets/31/CMM%20and%20Resolutions.pdf (accessed 19 May 2020).

[48] WCPFC CMM 2018-01, ibid, [34]. Further on the role of WCPFC observers for this purpose, see Richardson, Haynes, Talouli, et al., note 17, 1–2.

[49] IOTC Res. 19/02, [2] and [7], available at: https://iotc.org/cmms; IATTC Res. C-18-05, [9], available at: https://www.iattc.org/ResolutionsActiveENG.htm (accessed 2 December 2020); ICCAT Rec. 19-02, note 2, [18], Annex 1, [3(e)] and Annex 4; and WCPFC CMM 2018-01, note 48, [23].

[50] In the western and central Pacific Ocean less than 3% of dFADs were constructed only of natural materials as of 2020 and 18–34% were made entirely from artificial materials: see N. B. Phillip and L. Escalle, *Updated Evaluation of Drifting FAD Construction Materials in the WCPO*, 3, Doc. WCPFC-SC-16-2020/EB-IP-03, available at: https://www.wcpfc.int/node/46724 (accessed May 19, 2020).

[51] Articles 4 and 10(1)(2) of the Protocol.

shelf of any state must obtain the prior approval of that state before doing so, regardless of any permit that it may have obtained from the state of loading or its flag state under the London Convention or Protocol.

Article 216 of UNCLOS provides that a coastal state may institute proceedings against any vessel that dumps (i.e., abandons) a FAD in its maritime zones without having obtained its prior approval. Article 216 also reinforces the obligations in Article VII of the London Convention and Article 10 of the London Protocol by requiring the coastal state (where the breach takes place in its maritime zones), the flag state, and the state of loading to enforce "applicable international rules and standards" unless another state has already instituted proceedings. This provision is particularly relevant for states that are not parties to the London Convention or Protocol.

Action Against States That Fail to Comply with Their Obligations under the International Dumping Regime

Where a state failed to exercise its obligations under the international dumping regime with respect to the abandonment of FADs, it would be possible for a nonstate actor, such as an environmental organization, to make representations to the state concerned and request it to take corrective action. If that state declined to do so, there would be little more that a nongovernmental organization (NGO) could effectively do on its own. To take matters further, it would have to try to find a state that would be willing to take up the matter with the noncomplying state. That would not be easy. In general, with the notable exception of the World Trade Organization (WTO) dispute settlement procedures, states are reluctant to resort to more formal dispute resolution procedures, especially litigation, because of the cost, time, and effort involved. Furthermore, litigation is often perceived as an unfriendly act, and states are therefore cautious about initiating legal proceedings for fear of damaging their relations with potential defendant states. Thus, a state would be very unlikely to take action with respect to alleged breaches by another state of its obligations under the international dumping regime unless it had a particular interest in the matter, for example, if its tourist beaches had become littered with lost or abandoned FADs. If another state did take up the matter, it would begin by making diplomatic representations to the state of loading or the flag state. If that failed to persuade the state concerned to comply with its obligations, the other state could resort to the dispute settlement procedures of the international dumping regime. Such procedures vary, as between the three treaties that comprise the regime.

The London Convention contains no dispute settlement procedures. Amendments to the Convention to provide such procedures were adopted in 1978, but have not received the necessary number of ratifications to enter into force. Thus, a dispute relating to the Convention can only be resolved by utilising the general dispute resolution mechanisms of international law. Unlike the London Convention, the London Protocol does contain dispute settlement procedures. Articles 16 provides that disputes relating to the "interpretation or application" of the Protocol shall be resolved in the first instance through negotiation, mediation, conciliation, or other agreed means. Where a dispute cannot be resolved within 12 months using those means, either party may unilaterally

refer the dispute to arbitration, unless the parties agree to use the dispute settlement procedures of UNCLOS (outlined in the following) instead. The qualification in Article 16 that a dispute must relate to the "interpretation or application" of the Protocol is a standard formulation in dispute settlement clauses in treaties. It has long been established in the jurisprudence of international courts and tribunals that "application" in this context includes alleged breaches of the treaty in question. Although the Protocol has been in force since 2006, its dispute settlement procedures (with the possible exception of negotiations) have yet to be used. In addition to those procedures, the Protocol also has a noncompliance procedure.[52] Under this procedure, instances of alleged noncompliance by a state party to the Protocol may be referred to the Compliance Group by the Meeting of Contracting Parties, by the noncomplying state party itself, or by another state that has an interest that is likely to be affected by the noncompliance. The Group shall investigate the matter. Following the investigation, the Meeting of Contracting Parties may take one or more of a number of possible measures. To date, no allegations of noncompliance by individual states parties have been referred to the Compliance Group. Instead, the Group has considered systemic noncompliance by the parties generally.

UNCLOS contains an extensive system for the settlement of disputes relating to its interpretation or application in Part XV. Section 1 of Part XV requires states parties to settle any dispute between them by negotiation or other agreed means. Section 2 goes on to provide that any dispute that cannot be so settled may, with some exceptions (none of which is relevant in the present context), be unilaterally referred by any party to the dispute to legally binding settlement. To date, very few environmental disputes have been referred for settlement under section 2 of Part XV and none has concerned dumping.

Concluding Observations on FADs and the International Dumping Regime

The international dumping regime was not designed to deal with the use of FADs by fishing vessels and, perhaps not surprisingly, its application to FADs is not free from difficulty. In particular, it is not wholly certain whether the abandonment of a dFAD constitutes dumping. If it does, the application of the regime's regulatory system, especially the issue of permits, to such abandonment is not straightforward.

There has been some limited discussion of FADs in the institutions of the Convention and Protocol. In 2012, Greenpeace, together with experts from the Pew Foundation, gave an informal presentation on the problems of FADs to the governing bodies.[53] Greenpeace followed that up in 2015 with the presentation of a paper to the 38th meeting of the Scientific Group that highlighted the lack of knowledge about the deployment of FADs, the environmental problems that they can cause, and the need for better regulation.[54] The Scientific Group noted those points. The only member of the

[52] Compliance Procedures and Mechanisms pursuant to Article 11 of the 1996 Protocol to the London Convention, *Report of the Twenty-Ninth Consultative Meeting* (2007), annex 7. For the text as amended in 2017, see *Report of the Thirty-Ninth Consultative Meeting and Twelfth Meeting of Contracting Parties* (2017), annex 5.

[53] Greenpeace paper, note 14, 1.

[54] Ibid.

Group recorded as having expressed a specific view was the United States, which considered that the best approach to addressing the problems of unrecovered FADs was through regional forums, such as RFMOs. It added that it did not consider FADs inherently to be marine debris but "as the component of a well-regulated fishing technique" that was widely used.[55] The only record of any discussion of the issue in the reports of the Meetings since the 38th meeting of the Scientific Group is in the report of the 2019 Meetings. There it is recorded that Pew Charitable Trusts and Greenpeace gave an informal presentation on the problem of FADs as marine litter and the action that could be taken under the Convention and Protocol.[56] There is no record of any response to that presentation, and the text of the presentation is not included in the Meeting papers.

In theory, it would be possible for a state or an observer NGO to take up the matter again with the Scientific Group and/or Consultative Meetings, for example, by trying to persuade the Meetings to declare that abandonment was contrary to the international dumping regime. A less far-reaching alternative would be to follow the example of artificial reefs briefly mentioned earlier and try to encourage the Meetings to adopt guidelines on the deployment of FADs. However, in view of the response of members of the Scientific Group to the paper by Greenpeace, it is likely that it would be difficult to persuade the Meetings to adopt either of those courses of action.

A more productive approach might be to try to utilize the noncompliance procedure of the London Protocol. A state party, such as one whose tourist beaches were littered with abandoned FADs, might be willing to refer to the Compliance Group a state of loading or a flag state that was known, for example, not to issue permits for the abandonment of FADs made of permissible materials or prohibit the abandonment of FADs made of other materials. That would enable the Compliance Group to rule on exactly how the Protocol applied to the abandonment of FADs, thereby potentially resolving some of the current uncertainties.

Having examined the position under the international dumping regime, attention now turns to the question of whether the loss or abandonment of FADs contravenes MARPOL.

FADs and MARPOL

MARPOL is intended to address most forms of pollution from ships other than dumping. The detailed provisions laying down antipollution standards are set out in six annexes to the Convention. The only annex that is relevant to the loss or abandonment of FADs is Annex V, which deals with garbage.[57] The rules in Annex V apply not only to states that have ratified MARPOL. Article 211(2) of UNCLOS requires flag states parties to it to adopt laws and regulations for the prevention of pollution from ships

[55] *Report of the 38th meeting of the Scientific Group*, Doc. LC/SG38/16, 24.

[56] *Report of the Forty-First Consultative Meeting and Fourteenth Meeting of Contracting Parties* (2019), [90].

[57] The original text of Annex V was replaced by a revised version in 2011, which entered into force in 2013; see Res. 201(62) (2011) of the IMO's Marine Environment Protection Committee (MEPC). This and other resolutions of the MEPC referred to below are available at: https://www.imo.org/en/KnowledgeCentre/IndexofIMOResolutions/Pages/MEPC.aspx (accessed 2 December 2020). Annex V has subsequently been amended a number of times. Relevant amendments are referred to below.

having their nationality that "have at least the same effect as that of generally accepted international rules and standards." There can be no doubt that such "rules and standards" include Annex V of MARPOL, given that as of November 2020 it had been ratified by 154 states, the ships of which constituted 98.56% of the world fleet.[58] The effect of Article 211(2) of UNCLOS is that the small number of states (around 15) that are parties to UNCLOS, but not to Annex V of MARPOL, are bound to apply laws and regulations to ships having their nationality that have "at least the same effect" as the provisions of Annex V. As with the international dumping regime, it is not possible for Taiwan, whose vessels are responsible for a significant proportion of tropical tuna catches, to become a party to either MARPOL or UNCLOS.

In relation to MARPOL, the loss or abandonment of a FAD raises the following questions: (1) Does such loss or abandonment contravene Annex V? (2) If so, what action may be taken against individual vessels breaching Annex V and (3) their flag states?

Does the Loss or Abandonment of a FAD Contravene Annex V of MARPOL?

Annex V is concerned with the "discharge" of various types of garbage from "ships."[59] A "ship" is defined, in Article 2(4) of the Convention itself (rather than Annex V),[60] as "a vessel of any type whatsoever operating in the marine environment." Under Article 3 of the Convention, MARPOL applies to all kinds of ships having the nationality of a state party, as well as ships not having the nationality of a state party but "which operate under the authority" of a state party, with the exception of warships and other state-owned ships operated for noncommercial purposes. Thus, all fishing vessels having the nationality of a state party or operated under the authority of a state party come within the scope of MARPOL.

As for "discharge," this term is defined in Article 2(3)(a) of the Convention as meaning "any release howsoever caused from a ship and includes any escape, disposal, spilling, leaking, pumping, emitting or emptying." The placement of a dFAD in the sea that is subsequently retrieved would appear not to constitute a discharge as there is no permanent release, escape, or disposal. That is confirmed by the Guidelines for the Implementation of MARPOL Annex V, adopted by the MEPC in 2017,[61] paragraph 1.7.8 of which provides that "[f]ishing gear that is released into the water with the intention of later retrieval, such as fish aggregating devices (FADs) … should not be considered garbage or accidental loss in the context of Annex V." In contrast, the abandonment of a dFAD would seem to fall within the definition of "discharge" as it constitutes a "release," and in a particular a "disposal." Moreover, given that there is no requirement for a discharge under MARPOL to be deliberate (unlike the London Convention and Protocol, where disposal must be deliberate), the loss of a dFAD would also seem in principle to constitute a "discharge" as it falls within the concept of "escape," although, as will be seen in the following, there is an exception for accidental

[58] IMO, *Status of Treaties*, available at: https://wwwcdn.imo.org/localresources/en/About/Conventions/StatusOfConventions/StatusOfTreaties.pdf (accessed 2 December 2020).

[59] See Annex V, Regs. 3 and 2, respectively.

[60] Henceforth the term "the MARPOL Convention" (or simply "Convention") will be used to refer to the text of the Convention itself, and "MARPOL" to the Convention together with its annexes.

[61] MEPC Res. 295(71) (2017). The Guidelines replace a previous set of guidelines, adopted in 2012.

loss. The cause of the "escape" (loss of the dFAD) is immaterial since Article 2 refers to a release "howsoever caused." In the case of aFADs, the mere anchoring of a FAD in the sea probably does not constitute a "discharge" as it is intended to be used and not disposed of. However, where an aFAD breaks loose from its moorings and is not retrieved, that would appear to amount to a "discharge" within the meaning of MARPOL.

Article 2(3)(b)(i) of the MARPOL Convention excludes from its definition of "discharge" "dumping within the meaning" of the London Convention. Since the definition of dumping in the London Protocol is largely the same as that in the London Convention, it is reasonable to assume that the exclusion in Article 2(3)(b)(i) also includes the London Protocol. It was concluded earlier that the loss of a FAD did not constitute dumping under the London Convention or Protocol. Thus, such loss does not come within the exclusion in Article 2(3)(b)(i). However, it was concluded that abandonment of a FAD probably does constitute dumping under the London Convention. Thus, abandonment probably does fall within the exclusion. Nevertheless, in case that conclusion is incorrect, the application of MARPOL to abandoned FADs will be included in the discussion that follows.

Annex V prohibits the discharge of two groups of substances. First, Regulation 3.2 prohibits discharges into the sea of "all plastics," including "synthetic ropes" and "synthetic fishing nets." As noted earlier, plastic is currently widely used in the construction of FADs. The abandonment of a FAD containing plastic is therefore a clear breach of Annex V. Regulation 7.1.3 provides that in the case of the "accidental loss of fishing gear from a ship," there is no breach of Annex V if "all reasonable precautions have been taken to prevent such loss." Thus, the loss of a FAD containing any plastic will constitute a breach of Regulation 3.2 of Annex V unless the master/owner of the fishing vessel concerned can show that "all reasonable precautions" to prevent such loss were taken. The term "nonaccidental loss" is used here to refer to the loss of FADs where all reasonable precautions were not taken. Under Regulation 10.3.4 accidental loss must be recorded in the ship's log book; under Regulation 10.6 it must be reported to the flag state of the fishing vessel if it poses a significant threat to the marine environment or navigation and, if it occurs in the territorial sea or EEZ of another state, to that state.[62] There are no equivalent recording or reporting obligations in the case of nonaccidental loss or abandonment, presumably because such loss and abandonment are prohibited.

The second type of prohibited discharge is set out in Regulation 3.1. It prohibits the discharge of all "garbage," subject to certain exceptions. The only exception that is relevant to FADs is that relating to accidental loss in Regulation 7.1.3, referred to in the previous paragraph.[63] "Garbage" is defined in Regulation 1.9 as various kinds of listed waste, including "fishing gear," that is "generated during the normal operation of the ship and liable to be disposed of continuously or periodically." "Garbage" does not

[62] Para 2.2 of the Guidelines for the Implementation of MARPOL Annex V, ibid, gives guidance to states on how such reporting obligations should be implemented.

[63] There is a further exception for accidental loss in Reg 7.1.2, but as far as fishing gear is concerned, it adds nothing to the exception in Reg 7.1.3.

include fresh fish or parts thereof "generated as a result of fishing activities undertaken during the voyage."

Whether a lost or abandoned FAD constitutes "garbage" and thus falls within the prohibition in Regulation 3.1 depends on whether it is (1) "fishing gear"; (2) "generated during the normal operation of the ship"; and (3) "liable to be disposed of continuously or periodically." As to the first question, "fishing gear" is defined in Regulation 1.6 as "any physical device or part thereof … that may be placed on or in the water … with the intended purpose of capturing, or controlling for subsequent capture or harvesting, marine or fresh water organisms." Strictly speaking, the purpose of a FAD is not to capture fish or control their capture or harvesting, but to facilitate their capture. However, the Guidelines for the Implementation of MARPOL Annex V clearly assume that FADs are "fishing gear" since they refer to "[f]ishing gear that is released into the water …, such as fish aggregating devices (FADs)."[64] Likewise, the FAO Voluntary Guidelines on the Marking of Fishing Gear include provisions on FADs, thus implying that they are "fishing gear." It therefore seems safe to regard FADs as "fishing gear" for the purposes of Annex V.

The next question is whether a lost or abandoned FAD is "generated during the normal operation" of a ship. dFADs are certainly used during the "normal operation" of a fishing vessel; it also seems reasonable to suggest that their loss or deliberate abandonment is "generated" from such operation, even if "generate" is not perhaps the first verb that springs to mind as a description of losing or abandoning a dFAD during fishing operations. As its use in connection with the exclusion of fresh fish from the definition of garbage shows, "generate" is something of all-purpose verb in Annex V. Whether a lost aFAD can be said to be "generated during the normal operation" of a ship is less straightforward, but the fact that an aFAD is put into position from a ship arguably means that it is "generated" from a "normal operation" of a ship.

The final question is whether the loss or abandonment of FADs is such that it can be characterized as "liable to be disposed of continuously or periodically." Given the scale of the loss and abandonment of FADs described earlier, it would seem plausible to consider such loss and abandonment as disposal that is "liable" to occur "periodically."

Thus, while the matter is not wholly free from doubt, there is a strong argument for concluding that a FAD that is abandoned or not accidentally lost constitutes "garbage" within the meaning of Annex V. That conclusion is supported by the Guidelines for the Implementation of MARPOL Annex V, which, as noted earlier, state that "[f]ishing gear that is released into the water with the intention of later retrieval, such as fish aggregating devices (FADs) … should not be considered garbage or accidental loss in the context of Annex V." The implication of that statement is that the nonaccidental loss and abandonment of a FAD do constitute "garbage" for the purposes of Annex V. Further support comes from paragraph 2.2 of the Guidelines, which provides extensive guidance as to what Annex V requires in the way of reporting and documentation with respect to "the discharge or loss of fishing gear," thereby confirming that such fishing gear constitutes garbage. Paragraph 2.2 also encourages the fishing industry and governments to

[64] Guidelines, note 61, [1.7.8].

carry out the research and development necessary to "minimize the probability of loss, and maximize the probability of retrieval of fishing gear from the sea."

Thus, the nonaccidental loss and abandonment of a FAD are contrary to Annex V.[65] If a FAD contains plastic material, its nonaccidental loss or abandonment violates the prohibition in Regulation 3.2; if it does not contain such material, it violates the prohibition in Regulation 3.1. The next question is, what action may be taken against fishing vessels violating those prohibitions?

What Action May Be Taken Against a Fishing Vessel That Has Violated Annex V of MARPOL?

It is possible for punitive action to be taken against vessels that have violated Annex V by three categories of state: flag states, coastal states, and port states. The enforcement rights and duties of each group of states are next examined in turn. A *flag state* must enact legislation making violations of MARPOL by ships having its nationality a criminal (or administrative) offense, punishable with sanctions that are "adequate in severity to discourage violations" and that are equally severe regardless of where the violation occurs.[66] Where the flag state of a vessel is informed of a violation of MARPOL and "is satisfied that sufficient evidence is available to enable proceedings to be brought with respect to the alleged violation, it shall cause such proceedings to be taken as soon as possible, in accordance with its law."[67] Thus, if a flag state has sufficient evidence of a violation of Annex V, it must take criminal proceedings (or administrative proceedings if it is a state where regulatory offenses are normally sanctioned through administrative, rather than criminal, penalties) against the owner, operator, and/or master of the vessel. The observations that were made earlier about the difficulty of obtaining sufficient evidence to bring proceedings in the case of violations of the rules of the international dumping regime apply equally here. Some assistance to flag states may come from RFMO measures: The IOTC and ICCAT require fishing vessels to report the loss of a FAD to its flag state, while the WCPFC encourages them to do so.[68] Even if the flag state does have sufficient evidence, there is no guarantee that it will take action. Articles 4(1) and 6(4) of the MARPOL Convention refer to a flag state acting "in accordance with its law." Thus, a flag state might decline to institute proceedings if, for example, it was normal practice in that state not to institute criminal proceedings unless there was more than a 50% chance of conviction, or if it was not considered in the public interest to prosecute where the cost and effort of doing so were not commensurate with the gravity of the offense or the likely penalty for conviction.

[65] This has been explicitly acknowledged by one of the tropical tuna RFMOs. The preamble to WCPFC CMM 2017-04, available at: https://www.wcpfc.int/system/files/booklets/31/CMM%20and%20Resolutions.pdf (accessed 19 May 2020), notes that Annex V of MARPOL "prohibit[s] the disposal of all fishing gear and plastics at sea." Somewhat curiously, the measure does no more than "encourage" WCPFC members to prohibit their vessels from discharging "garbage, including fishing gear" in accordance with Annex V ([3]). A footnote states that fishing gear "released into the water for later retrieval such as FADs . . . are not considered garbage."

[66] Article 4(1) and 4(4) of the MARPOL Convention.

[67] Articles 4(1) and 6(4).

[68] See, respectively, IOTC, Res. 19/02, note 49, [10]; ICCAT, Rec. 19-02, note 1, 37; and WCPFC CMM 2017-04, note 65, [5] and [10].

Paragraphs 4 and 6 of Article 217 of UNCLOS impose obligations on flag states similar to those in Articles 4(1) and 6(4) of the MARPOL Convention in relation to "a violation of rules and standards established through the competent international organization." The latter is universally understood to be the IMO, with the consequence that the "rules and standards" referred to include MARPOL. The practical importance of Article 217(4) and (6) primarily relates to the relatively few flag states that are parties to UNCLOS but not to MARPOL. The same caveats may be made about these provisions as were made about Articles 4(1) and 6(4) of MARPOL.

Turning now to the enforcement role of *coastal states*, Article 4(2) of the MARPOL Convention provides that if a violation of MARPOL occurs "within the jurisdiction" of a state other than the flag state, that is, within the territorial sea or EEZ of another state, that state, that is, the coastal state, shall either inform the flag state or institute proceedings with respect to the alleged violation itself. Unless a lost or abandoned FAD has caused substantial damage in its waters, a coastal state is likely to exercise the former option, as it will have little interest or incentive in going to the bother and expense of instituting proceedings. Furthermore, it may be difficult for a coastal state to obtain adequate evidence of an alleged violation. As with flag states, UNCLOS includes parallel enforcement provisions for coastal states. Article 220(1) provides that where a vessel is voluntarily within one of its ports, a state may (but is not obliged to) institute proceedings with respect to any violation of applicable international rules and standards (including MARPOL) when such a violation has occurred within its territorial sea or EEZ. However, a coastal state may not arrest in its territorial sea or EEZ a vessel suspected of having committed a pollution offense there save in exceptional circumstances, which do not cover the loss or abandonment of a FAD.[69]

As regards *port states*, Article 6(2) of the MARPOL Convention provides that they may inspect a vessel in one of their ports "for the purpose of verifying whether the ship has discharged any harmful substances in violation of" MARPOL.[70] It is immaterial where a discharge (i.e., loss or abandonment) took place. In practice, it would seem difficult for a port state to determine from such an inspection whether a dFAD had been abandoned or lost, although there may be evidence in the log book. Both the IOTC and ICCAT require vessels to record information concerning FAD activity in the log book.[71] If the inspection indicates that a violation of MARPOL has occurred, the port state must send a report to the flag state.

As in the case of flag and coastal states, UNCLOS includes broadly parallel enforcement provisions for port states. Article 218(1) authorizes a port state to investigate any vessel suspected of having made a discharge beyond the maritime zones of that state "in violation of applicable international rules and standards."[72] Such rules and standards include MARPOL. Where its investigation reveals a violation, the port state may (but is not obliged to) institute proceedings "where the evidence so warrants." It seems unlikely that a port state would have any interest in bringing proceedings with respect to

[69] 1982 UNCLOS, Arts 27(1) and 220 (2)–(6).

[70] There is a broadly similar power where another state requests an inspection; see Article 6(5).

[71] See, respectively, IOTC Res. 19/02, note 49, [11]; and ICCAT Rec. 19-02, note 1, [37].

[72] Discharges within a port state's maritime zones fall under Article 220(1), discussed in the preceding.

discharges occurring beyond its maritime zones. In any case, under Article 218(2), it may not bring proceedings where the discharge occurred within the maritime zones of another state unless requested by that state or the flag state.

It is obvious from the amount of litter (including fishing gear) found at sea and washed up on beaches that observance of Annex V by vessels is poor, and that enforcement by flag, coastal, and port states has not been sufficient to act as a deterrent. Recently, Vanuatu proposed two amendments to Annex V designed to improve compliance by fishing vessels. The first would require parties to MARPOL to notify the IMO of the discharge or accidental loss of fishing gear.[73] The second would require fishing gear to be so marked as to enable the owner of the gear and the vessel on which it was deployed to be identified.[74] The amendments are currently being considered by the MEPC with a view to possible adoption. Further tightening up of Annex V in relation to fishing vessels may in due course occur through implementation of the Action Plan to address Marine Plastic Litter from Ships, adopted by the MEPC in 2018, which contains a detailed section on fishing vessels.[75]

What Action May Be Taken Against a Flag State with Respect to a Breach of Annex V of MARPOL by One of Its Fishing Vessels?

It is primarily the flag state that is required to ensure that its fishing vessels comply with MARPOL, not coastal states or port states. This section therefore focuses on the action that could be taken against the flag state. Nevertheless, the dispute settlement procedures of MARPOL, discussed in the following, could also be used against coastal and port states that were in breach of their enforcement obligations. As in the case of dumping, a flag state's obligations of implementation and enforcement are obligations of due diligence, not obligations of result. Thus, a violation by one of its vessels of Annex V does not necessarily mean that a flag state is in breach of its obligations under MARPOL.

Where a flag state was considered to be in breach of its due diligence obligations under MARPOL, it would be possible for a nonstate actor, such as an environmental or fisheries NGO, to make representations to that state and request it to take corrective action. If the flag state declined to do so, an NGO could try to find another state to take up the matter with the flag state. If that state did do so, it would begin by making diplomatic representations to the flag state. If that failed to persuade the flag state to comply with its obligations, the other state could resort to the dispute settlement procedures of MARPOL. They are set out in Article 10 of the Convention and provide that any dispute relating to the interpretation or application of MARPOL that has not been settled by negotiation or other agreed means may be referred by either party to the dispute to arbitration, the procedure for which is set out in Protocol II. It seems unlikely that another state would be willing to resort to arbitration because it is both expensive and time-consuming. In fact, the arbitration procedures of MARPOL have never once been used during the nearly 40 years since MARPOL entered into force.

[73] MEPC, *Report of the 74th Session* (2019), 69.
[74] MEPC, 75th Session Doc. 75/8/4 (2020).
[75] MEPC Res. 310(73) (2018).

In 2014, the MEPC adopted amendments to Annex V that introduce a new mechanism for seeking to ensure compliance by flag states with their obligations.[76] The amendments, which came into force at the beginning of 2016, add a new Regulation 12 to Annex V under which every flag state party is subject to periodic audit to verify implementation of Annex V.[77] Where a flag state was thought to be in breach of its obligations under Annex V relating to the nonaccidental loss and abandonment of FADs and was to be subject to periodic audit, it would be possible for an NGO or another state so to inform the IMO, which operates the audit scheme.

In addition, the UNCLOS dispute settlement procedures, outlined in the preceding, could be used against a flag state that was in breach of relevant obligations under UNCLOS. Those obligations, as seen earlier, include the adoption and enforcement of laws that have at least the same effect as Annex V.[78] To date, those procedures have not been used for this purpose.

Conclusions

A large number of FADs are lost or abandoned every year, with many eventually washing up on beaches as litter, stranding in sensitive marine habitats, such as coral reefs and seagrass beds, or sinking and causing damage to seabed habitats. That raises the question of whether international marine pollution law, in particular the international dumping regime (the London Convention, London Protocol, and UNCLOS) and MARPOL, could be used to regulate and mitigate such loss and abandonment. As far as the international dumping regime is concerned, the abandonment (but not the loss) of a FAD probably constitutes "dumping." From that it follows that where the London Convention is the applicable law, the state of loading or the flag state, as the case may be, must prohibit the abandonment of FADs made of persistent plastics or other persistent synthetic materials and issue permits for all FADs made of other materials that a fishing vessel intends to abandon. Where the London Protocol is the applicable law, the state of loading or flag state must prohibit the abandonment of FADs made of materials other than "organic material of natural origin," and must issue permits for the deliberate abandonment of FADs that are made of such materials. Under UNCLOS, where a fishing vessel intends to abandon a FAD in the territorial sea, EEZ, or continental shelf of a state other than the state of loading or the flag state, it must obtain the express prior approval of that state. There is a due diligence obligation on the state of loading and the flag state to enforce the prohibitions and permit systems of the London Convention and Protocol. Where those states fail to do so, they may be made subject to the dispute settlement processes of the London Protocol and UNCLOS, and to the noncompliance procedure of the London Protocol.

In the case of MARPOL, the nonaccidental loss of a FAD constitutes a breach of Annex V. That is also the case with the abandonment of a FAD, should the conclusion that abandonment falls within the scope of the international dumping regime not be

[76] MEPC Res. 246(66) (2014).

[77] For information on the IMO's audit scheme, see https://www.imo.org/en/OurWork/MSAS/Pages/Default.aspx (accessed 2 December 2020).

[78] UNCLOS, Arts 211(2) and 217(4) and (6).

correct. Flag states are under a due diligence obligation to enforce Annex V. Action against states that fail to do so may be taken under the dispute settlement procedures of MARPOL or UNCLOS. Alternatively, such failure could be drawn to the attention of the IMO when the flag state concerned was next due for audit under the IMO's mandatory audit scheme.

Over the past few years, tropical tuna RFMOs have adopted a number of measures designed to alleviate some of the environmental problems caused by lost or abandoned FADs. All four RFMOs prohibit the use of entangling material suspended beneath FADs in order to prevent sharks, turtles, and other nontarget species from becoming entrapped, and "encourage," but do not (yet) require, FADs to be constructed of biodegradable materials apart from the satellite buoy.[79] The ICCAT and WCPFC encourage the recovery of lost and abandoned FADs.[80] Both RFMOs also prohibit the use of FADs in certain areas at certain times of the year[81]; it is not clear whether that leads to a reduction in the use (and therefore the loss and abandonment) of FADs or simply leads to greater concentrations when their use is permitted. It remains to be seen how well the mandatory measures will be observed, and whether the hortatory measures eventually become mandatory.[82] In the meantime, there is a real need for the international dumping regime and MARPOL to be properly implemented and effectively enforced so that the significant pollution caused by lost and abandoned FADs may be reduced and eventually eliminated.

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[79] IOTC Res. 19/02, note 49, [17] and [18]; IATTC Res. C-18-05, note 49, [10]; ICCAT Rec. 19-02, note 1, [40] and Annex 5; and WCPFC CMM-2018-01, note 47, [19] and [28].

[80] ICCAT Rec. 19-02, note 1, [35] and Annex 1; and WCPFC CMM-2017-04, note 65, [5] and [9].

[81] ICCAT Rec. 19-02, note 1, [27] and [28]; and WCPFC CMM-2018-01, note 49, [16] and [17]. In the Mediterranean Sea the General Fisheries Commission for the Mediterranean has also established a closed season when the use of FADs is not permitted: see Rec. GFCM/30/2006/2, available at: http://www.fao.org/gfcm/decisions/en (accessed 2 December 2020).

[82] For further measures that the WCPFC (and by implication other tuna RFMOs) could take, see Hanich, Davis, Holmes, et al., note 7, 753.