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"Migratory waterbirds and people - sharing wetlands"

LITERATURE REVIEW: EFFECTS OF THE USE OF LEAD FISHING WEIGHTS ON WATERBIRDS AND WETLANDS

Prepared by the UNEP/AEWA Secretariat (2011)

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A. Summary

I. Scale of the issue

1. Waterbirds usually ingest fishing weights weighing less than 50 g and having a size of less than 2 cm in any dimension, mistaking them for food or grit.

2. Fishing weights ingested by waterbirds are those used in sport fishing.

3. Ingestion of a single fishing weight can lead to acute lead poisoning.

4. 14 species of waterbirds listed by AEWA have been documented to be affected by lead poisoning through lead fishing weights.

5. The precise amounts of lead entering the environment in the form of fishing weights used in sport fishing are currently not known; estimates range in the order of up to ca. 4,000 tonnes/year for the USA, over 550 tonnes/year (Canada), and 2,000-6,000 tonnes/year for EU25.

6. Due to a lack of data, the extent of waterbird mortality related to lead weight ingestion can currently not be estimated accurately, but several scientific studies suggest that it is high for a number of waterbird species in areas with high angling activity.

II. Approaches to the issue

1. Numerous non-toxic alternatives to lead fishing weights are available on the North American and European markets.

2. Most alternative materials are currently more expensive than lead and many are inferior to lead in terms of e.g. density and malleability.

3. A switch to non-lead fishing weights is estimated to increase an angler's overall annual budget on fishing equipment only marginally.

4. Few countries have legislation regulating the use/sale of lead weights; wide-reaching bans are in place in the United Kingdom and Denmark; limited restrictions exist in the United States and Canada.

5. The UK ban appears to have been successful in terms of anglers' compliance and decreasing waterbird (Mute Swan) mortality.

6. Partial bans of smaller lead weights, such as bans restricted to national parks or certain types of weights only, have been suggested to be insufficient in terms of compliance, enforcement and wildlife health.

B. Literature review

I. Introduction

Lead is a naturally occurring metal. It is soft, malleable and available at relatively low cost and this has contributed to its use in a variety of industrial and consumer products, including fishing weights.[1] Awareness of the risks related to lead fishing weights was raised in the 1970s as a number of Mute Swan (*Cygnus olor*) populations declined substantially in the United Kingdom.[2,3] Subsequently, several reports provided evidence of the hazards of lead weights, in particular for the Great Northern Diver, also known as Common Loon (*Gavia immer*), in the United States and Canada.[4]

Fishing weights are used to cast lighter baits, help them sink or hold them in a specific spot. The weights enter the environment, for instance, when they are lost due to line breakage or when they get discarded by anglers. As is the case with lead shot, waterbirds ingest lead fishing weights mistaking them for food or grit which helps them to grind food in the gizzard for better digestion. Once a lead weight enters the gizzard and is ground down, lead is released into the blood.

As regards lead shot, paragraph 4.1.4 of the Action Plan requests Parties to "*endeavour to phase out the use of lead shot for hunting in wetlands as soon as possible in accordance with self-imposed and published timetables*." The issue of lead poisoning caused by the use of lead fishing weights, however, has not been addressed in any AEWA legal, policy or guiding document so far although it is very much comparable to the problem caused by lead shot.

One of the recommendations resulting from the last update report on the use of non-toxic shot for waterbird hunting (AEWA Secretariat, 2007) suggested that the Technical Committee give advice on the relevance of the use of lead fishing weights for species covered by AEWA and provide its recommendations on this issue.

To this end, Resolution 4.1 on *Phasing out lead shot for hunting in wetlands* (Madagascar, September 2008), *inter alia*, requests the Technical Committee "*to examine, as far as waterbird species covered by the Agreement are concerned, any potential problems from [...] the use of lead fishing weights."*

At its 9th meeting (March 2009) the Technical Committee decided that the Secretariat should undertake a literature review in order to provide the basis for a decision on how to proceed in response to the request addressed to it by the Meeting of the Parties.

For the purpose of this literature review more than 30 scientific papers were reviewed and some 20 additional relevant resources, such as newspaper articles and press statements, consulted. The focus is on literature from the USA and Canada, as this is where a major part of the relevant research has been carried out, but the review also draws in perspectives internationally. It does not claim to be exhaustive but is rather designed to highlight key issues related to the effects that the use of lead fishing weights can have on AEWA species and their habitats, and to recommend ways of how AEWA could deal with them.

[1] Cf. Scheuhammer & Norris (1995), p. 8.
[2] Sears (1988) as cited in: Rattner et al. (2008), p. 9.
[3] French (1984).
[4] Cf. e.g. Pokras & Chafel (1992); Stone & Okoniewski (2001); Sidor et al. (2003).

II. Scale of the issue

1. Types and sizes of fishing weights ingested by waterbirds

Fishing weights come in a variety of different shapes, with widely used types including split shot, worm, egg and pyramid weights.[5] In addition to fishing weights, anglers often use jigs. These are fishing lures which consist of a (lead) weight body which is attached to a hook. Waterbirds usually ingest smaller weights, weighing less than 50g and being smaller than 2 cm in any dimension.[6] There are exceptions, however, as larger waterbirds can ingest larger-sized, heavier weights.[7] The weights that tend to be ingested are exclusively used for sport angling.[8] The sizes vary but the majority of these fishing weights have a size of less than 2 cm in any dimension.[9,10] Ingestion of a single fishing weight can lead to acute or lethal lead poisoning.[11]

2. Waterbird species at risk of lead fishing weight ingestion

14 AEWA species have been reported to ingest lead fishing weights. In particular, lead weights have been documented to be ingested by the Great Northern Diver or Common Loon (*Gavia immer*).[12] Scheuhammer et al. (2003) note that "[l]ead sinker or jig ingestion is the single most important cause of death of adult Common Loons reported in Canada and the United States".[13] In the United Kingdom, lead poisoning resulting from the ingestion of fishing weights was revealed to be the largest single cause of Mute Swan deaths since the 1960s[14], a trend that was reversed after smaller lead weights were banned in England and Wales in 1987.[15]

<u>AEWA species reported to have ingested lead fishing weights or jigs[16]:</u>

GAVIIDAE
- Great Northern Diver or Common Loon *(Gavia immer)*

ARDEIDAE
- Great Egret *(Casmerodius albus)*
- Black-crowned Night-heron *(Nycticorax nycticorax)*

[5] Cf. e.g. European Commission (2004), p. 84 for pictures of various fishing weight types.
[6] Scheuhammer & Norris (1995).
[7] E.g. Franson et al. (2003) documented a pyramid lead weighing 78.2 g in a Common Loon.
[8] Scheuhammer & Norris (1995), p. 14.
[9] Cf. Scheuhammer & Norris (1995), p. 14: For most freshwater angling activities, fishing weights of a weight of up to 230g, and measuring from ca. 2 mm to 8 cm in the longest dimension are used.
[10] US EPA. 1994. as cited in: Scheuhammer & Norris (1995), p. 14.
[11] Cf. Scheuhammer & Norris (1995), p. 24. and Pokras et al. (1993) as cited in: Scheuhammer et al. (2003), p. 17.
[12] Cf. e.g. Scheuhammer & Norris (1995).
[13] Scheuhammer et al. (2003), p. 25.
[14] E.g. Birkhead (1982) as cited in: Rattner et al. (2008). p.30.
[15] Cf. e.g. Delaney et al. (1990).
[16] According to various sources compiled by Scheuhammer et al. (2003) and Rattner et al. (2008). In addition, 15 non-AEWA waterbird species are listed.

ANATIDAE

- Mute Swan *(Cygnus olor)*
- Whooper Swan *(Cygnus cygnus)*
- Tundra or Bewick's Swan *(Cygnus columbianus)*
- Mallard *(Anas platyrhynchos)*
- Common Pochard *(Aythya ferina)*
- Greater Scaup *(Aythya marila)*
- Velvet Scoter *(Melanitta fusca)*[17]
- Red-breasted Merganser *(Mergus serrator)*
- Goosander or Common Merganser*(Mergus merganser)*

LARIDAE

- Herring Gull *(Larus argentatus)*

STERNIDAE

- Royal Tern *(Sterna maxima)*

Scheuhammer et al. (2003) actually assume that "[v]irtually all species of piscivorous bird, as well as species that feed in nearshore soils and sediments, are at risk of lead poisoning from inadvertent consumption of lost or discarded lead sinkers."[18]

Apart from bird species, the Snapping turtle (*Chelydra serpentine*) and Painted turtle *(Chrysemys picta)* have also been reported to ingest lead fishing weights.[19] In addition, it is assumed that there is a risk of secondary poisoning for predators and scavengers of waterbirds.[20] A health hazard also exists for humans, in particular when they manufacture their own fishing weights at home, as melted lead can produce airborne particles that may be inhaled or get lodged in the home.[21]

3. Quantities of lead fishing weights dispersed in the environment

Due to a lack of accurate data it is currently not possible to determine with certainty the amounts of lead that enter the environment when anglers lose or discard lead fishing weights. However, (rough) estimations have been made based on the amounts of lead used in fishing weight manufacture, on the estimated amounts of lead tackle sold annually and on studies of weight loss rates.

Scheuhammer et al. (2003) estimate that the mass of lead sold as fishing sinkers is 3,977 tonnes annually in the United States and up to 559 tonnes in Canada, and additionally an undetermined amount of lead jigs.[22] They believe that most new fishing weights are bought to replace lost ones and hence suggest that the amount of newly purchased lead fishing weights more or less equals the amount of those lost/discarded in the environment.[23]

[17]In Scheuhammer et al. (2003) the North American common name White-winged Scoter is used for *Melanitta fusca*.
[18]Scheuhammer et al. (2003), p. 18.
[19]Ibid., pp. 18f.
[20]Rattner et al. (2008), p. 32.
[21]Cf. US EPA. http://water.epa.gov/scitech/swguidance/fishshellfish/humans.cfm
[22]Scheuhammer et al. (2003), p. 12.
[23]Ibid, p. 14.

While concluding that angling can lead to considerable amounts of lead weights entering the environment, Rattner et al. (2008) state that the amounts of lead fishing equipment dispersed in wetlands vary significantly, with the intensity of fishing pressure, angler skill and the characteristics of a particular wetland (heavily vegetated, rocky etc.) all playing a role.

A 2004 European Commission report estimated that the total consumption of lead for fishing weights used in non-commercial angling, was 2,000 – 6,000t/year for EU25.[24] However, the data (and availability of data) on which these estimates are based vary considerably from country to country, and hence these figures are likely to be rather tentative.

4. Extent of waterbird mortality due to lead weight ingestion

About six cases of lead weight induced wildlife mortality were reported in Canada annually for the period 1987-1998 (mostly *Gavia immer*), in the United States, the reported number of cases was 20 per year on average (including swans, cranes, pelicans, and cormorants) for the period 1983-1998.[25] An accurate estimate of the overall extent of lead weight related waterbird mortality is currently not possible. As most documented cases of waterbirds affected by lead toxicosis after lead weight ingestion have stemmed from co-incidental discovery, Scheuhammer et al. (2003) believe that "it is unlikely that such a volunteer effort documents more than a small percentage of the total number of lead sinker poisoning cases".[26]

Comparing data from various Canadian and U.S. studies, Scheuhammer et al. (2003) found that according to relatively long-term studies, reported adult loon mortality in eastern North America, caused by the ingestion of lead weights, was between 22% - 53%.[27] In a study carried out from 1987 – 2000 and examining the mortality of 522 Common Loons found dead or moribund in New England (northeastern United States), almost half of the breeding adults examined had died of confirmed and suspected lead toxicosis related to ingested fishing weights (111 out of 254)[28].

A 2008 US Technical Review states that in contrast to lead shot, lead toxicosis through lead weight ingestion is apparently more geographically restricted but is nevertheless of concern (with regard to *Gavia immer*), especially for declining populations.[29] On the same note, Radomski et al. (2006) conclude that "[i]n critical wildlife areas with high angling effort or high tackle loss rates, lead tackle could pose a significant risk to waterbirds".[30]

The American Fisheries Society (AFS) in a proposed 2010 policy statement expressed the view that "[a]lthough significant negative effects on localized populations of loons and swans from ingestion of lead fishing tackle in areas of high angling effort have occurred, this is not a widespread problem." The AFS is, nonetheless, in favour of a phase out of smaller lead fishing sinkers (see III.2.a).[31]

A 1981 report by the Nature Conservancy Council established lead toxicosis from ingested lead weights as the largest single cause of Mute Swan mortality in Britain. It also identified a number of areas where 70% – 90% of reported Mute Swan deaths were attributed to lead poisoning (see also III.2.c).[32] In contrast, a Canadian study relating to swans' artifacts ingestion on the lower Great Lakes found that only one of 243 Mute Swans collected had ingested a lead weight and the study suggested that this low incidence was attributable to a lower density of anglers (compared to Britain).[33,34]

[24]European Commission (2004), pp. 94f.
[25]According to various data summarized by Scheuhammer et al (2003), cf. pp. 22-25.
[26]Ibid, p. 22.
[27]Ibid. pp. 21 and 26.
[28]Sidor et al. (2003).
[29]Cf. Rattner et al. (2008), p. 33
[30]Radomski et al. (2006), p. 211.
[31]American Fisheries Society (2010).
[32]Cited in: French. (1984), p. 25.
[33]Bowen & Petrie. (2007).

III. Approaches to the issue

1. Non-lead fishing weights

a. Alternative materials and availability

In the United States and Canada, numerous non-lead fishing weights are meanwhile available, made of materials such as tungsten, steel, tin, bismuth, glass, ceramics, and iron.[35,36] The Minnesota Pollution Control Agency, for instance, maintains a list of 35 manufacturers of non-toxic fishing tackle.[37]

These substitutes can differ with regard to the tackle types for which they lend themselves.[38] Most of this non-lead fishing gear is currently more expensive than its lead counterpart because the raw materials, from which it is made, is more expensive than lead and the manufacturing process can be more complex.[39] In addition, several alternative materials have a lesser density than lead and hence are larger than a lead equivalent of the same weight, and many anglers believe that bigger weights deter fish from taking the bait.[40]

Rattner et al. (2008) conclude that "[a]lthough several substitutes for lead sinkers currently are available, lead fishing sinkers remain very popular with anglers as they are economical and perform well. None of the lead-free alternatives offer the overall performance of lead fishing tackle with respect to gravity, malleability, ease of production, and cost."[41] Scheuhammer and Norris predicted, in 1995, that the market for non-lead fishing gear will remain marginal until lead weights are made unavailable.[42]

Likewise, non-lead fishing weight substitutes can be purchased by anglers in Europe. The European Fishing Tackle Trade Association (EFTTA) reported in 2005 that "[t]here are several alternatives to lead fishing sinkers available on the market or currently under development".[43] EFTTA encourages its members to switch to lead-free weights while highlighting that "an EU-wide ban would translate into costs in production, operations and administration for its members".[44] No information was found on the European Anglers Alliance (EAA) stance on lead weights.

The 2004 European Commission report found that, driven by the UK ban of smaller lead weights (see III.2.c), "substitutes seem to be available for many but not all types of lead sinkers", while noting that "the development of substitutes is […] somewhat limited by the fact that the most extensive ban on lead exist [sic] in Denmark, which is a little market not necessarily interesting for foreign manufacturers.[45]

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[34]It should also be noted that the Canadian study examined seemingly healthy swans while many other studies have focused on dead or moribund birds.
[35]E.g. Scheuhammer & Norris (1995) and Scheuhammer et al. (2003).
[36]Other alternative materials such as zinc do not appear to be viable substitutes as they have toxic effects. Cf. Rattner et al. (2008), p. 39.
[37]Cf. http://www.pca.state.mn.us/index.php/living-green/living-green-citizen/household-hazardous-waste/get-the-lead-out/get-the-lead-out-manufacturers-and-retailers.html
[38]Scheuhammer & Norris (1995), p. 42.
[39]Scheuhammer et al. (2003), p. 37.
[40]Rattner et al. (2008), p. 37.
[41]Ibid, p. 39.
[42]Scheuhammer & Norris (1995). p. 44.
[43]EFTTA (2005).
[44]EFTTA (2008).
[45]European Commission (2004), p. 13.

b. Additional cost related to switching to non-lead fishing weights

In addition to effectiveness, cost is a decisive criterion for the purchase of fishing gear by anglers. Lead fishing weights account for only a very small proportion of an angler's overall annual expenditure on fishing equipment (less than 1%)[46] and hence switching to non-lead alternatives is expected to involve only small additional cost. Scheuhammer and Norris (1995) calculate that a switch could mean an increase of up to $10[47](for using more expensive alternatives) on an angler's annual budget, an increase which they do not deem significant or prohibitive.[48] Scheuhammer et al. (2003) estimate that using non-lead fishing weights will raise the average angler's annual expenditure by less than 1% (approx. $2.00).[49] However, many raw materials are currently more expensive than in recent years and this may make switching to non-lead fishing gear more difficult.[50]

The 2004 European Commission report estimates that a restriction of the use of lead fishing weights used in inland waters would lead to incremental costs of approx. €1.2 – €10.4 per angler per year[51], noting that the ongoing process of outsourcing European production to Asia made a comparison of the prices of lead versus non-lead fishing equipment more complicated.[52]

2. Regulations & bans

a. United States of America

Since the late 1990s, four US states - Maine, New Hampshire, Vermont and New York State - have introduced a ban on the use and/or sale of smaller lead weights and jigs. In Massachusetts, lead weights have been prohibited since 2001 in two reservoirs used by *Gavia immer*, and a ban on the use of lead fishing weights, weighing below one ounce, in all inland waters will take effect as from 1 January 2012.[53] Of the 553 National Wildlife Refuges, fewer than ten with loon and swan populations have regulations banning lead fishing sinkers, as does one National Park.[54]

Small-scale lead tackle exchange schemes and educational programmes are offered by a number of US states and NGOs.[55]

In 1994, the United States Environmental Protection Agency (USEPA) proposed a nationwide ban on smaller lead, brass and zinc weights but there was opposition from several states and angling organizations claiming there was not sufficient evidence to justify a ban.[56] The proposed regulations were never enacted.[57] Thomas and Guitart (2009) suggest that part of the difficulties in regulating the use of lead fishing sinkers in the US is due to the fact that two competing agencies (the USEPA and the United States Fish and Wildlife Service, USFWS) have been involved in regulating lead use in recreational sports.[58]

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[46]Scheuhammer & Norris (1995), p. 52.
[47]Canadian dollars.
[48]Scheuhammer & Norris (1995), p. 52.
[49]Scheuhammer et al. (2003), p. 38.
[50]Cf. also Goddard et al. (2008), pp. 232f.
[51]European Commission (2004), p. 112.
[52]Ibid, p. 107.
[53]http://www.mass.gov/dfwele/dfw/recreation/fishing/lead_sinkers_loons.htm
[54]Center for Biological Diversity et al. (2010), pp. 55f.
[55]Center for Biological Diversity et al. (2010), p. 51. E.g. Minnesota Pollution Control Agency. Let's get the lead out! http://www.pca.state.mn.us/index.php/living-green/living-green-citizen/household-hazardous-waste/nontoxic-tackle-let-s-get-the-lead-out.html
[56]Cf. ASA (2002).
[57]Cf. e.g. Thomas & Guitart (2010), p. 62.
[58]Cf. Thomas & Guitart (2009).

In 2010, the American Bird Conservancy together with a number of other groups petitioned the USEPA to ban the manufacture, processing and distribution in commerce of all lead fishing weights (as well as lead shot and bullets).[59] The USEPA denied the requested ban on lead in fishing tackle arguing that the petitioners had failed to demonstrate the necessity of such a ban to protect against an unreasonable risk of injury to health or the environment, as required by the Toxic Substances Control Act (TSCA). Pointing to the regulations existing in some US states, along with the existing educational and tackle exchange programmes, and the increasing availability of non-lead weights, the USEPA furthermore expressed doubts that "the broad rulemaking requested in [the] petition would be the least burdensome, adequately protective approach", as required by TSCA.[60]

The American Fisheries Society (AFS), despite holding the view that the negative impact of lead fishing gear on *Gavia immer* and swans does not constitute a widespread problem (see II.4), advocates the phasing out of smaller lead fishing weights (less than 2.5 cm in any dimension), pointing to the well-recognized toxicity of lead and stating that "the elimination of lead is an important societal issue".[61]

The American Sportfishing Association (ASA) "recommends that before further laws are enacted to restrict lead fishing tackle on a state or national basis, sufficient data must exist to demonstrate that discarded lead tackle is an actual threat to the sustainability of loon or other waterbird populations."[62]

b. Canada

Canada introduced a ban, in 1997, on the use of lead weights and jigs weighing less than 50 g in national parks and national wildlife areas. A much more comprehensive ban was discussed by Canadian government bodies but no actions were subsequently taken.[63,64]

As in the US, the Canadian Government and a number of NGOs have also disseminated information material on the problems related to the use of lead fishing tackle and non-lead substitutes. In addition, there have been small-scale programmes to promote the voluntary exchange of lead weights for non-toxic alternatives.[65]

c. United Kingdom

The importation and sale of lead fishing weights weighing more than 0.06 g and less than 28.35 g were banned in the UK in 1987 and in the same year the use of these weights was banned in England and Wales.[66,67] These restrictions were introduced in response to a 1981 report by the Nature Conservancy Council identifying lead poisoning from fishing weights as being the biggest single cause of mute swan mortality in Great Britain (the report estimated that some 4,000 swans might be dying annually of lead poisoning).[68,69] In addition, the report found that there were 'hot spots' with 70-90% of reported mute swan deaths being a result of lead poisoning.[70] Previous voluntary measures had proved not to be sufficient.[71]

[59]Center for Biological Diversity et al. (2010).
[60]US EPA (2010).
[61]http://www.fisheries.org/afs/policy/policy_leads
[62]http://www.asafishing.org/government/lead_in_tackle.html
[63]Environment Canada (2004).
[64]Thomas & Guitart (2010), p 62.
[65]Scheuhammer et al. (2003), p. 37.
[66]http://www.environment-agency.gov.uk/homeandleisure/recreation/fishing/37941.aspx
[67]Perrins et al. (2003), p. 205.
[68]Ibid.
[69]French (1984), p. 25.
[70]Ibid.
[71]Cf. Kirby et al. (1994) and Scheuhammer & Norris (1995).

d. Denmark

Denmark imposed a ban on the import and sale (not the use) of lead tackle which came into force in 2002. This legislation is part of a general ban on the import and sale of products containing lead compounds, and a ban on the import and sale of a number of products containing metallic lead, including lead fishing gear. [72,73] Denmark is the only country that has banned (the sale of) ALL lead fishing gear.

e. Sweden

For some rivers in Sweden, voluntary restrictions on lead fishing weights are in place[74]. In addition, a voluntary phase-out approach for lead tackle has been ongoing but as a 2007 report from the Swedish Chemicals Agency (KemI) pointed out, the "[v]oluntary phasing-out of lead in angling has been in progress for 15 years without adequate results having been achieved, stronger incentives are needed."[75] The report referred to the estimated amounts of lead used in non-commercial angling (200t/year), which had not decreased over a period of ten years (1995-2005) despite information campaigns encouraging anglers to switch to non-lead alternatives. In the report, KemI together with the Swedish Environmental Protection Agency state that one way of achieving a restriction on lead in fishing tackle might be via an EU-wide approach, using the Limitations Directive / the Regulation on Registration, Evaluation, Authorization and Restriction of Chemicals (REACH). However, the report prefers a national ban - arguing it could be implemented more quickly than a regulation on the European level - and proposes restricting to 0.1% the lead concentration in fishing gear.

f. European Union

The European Commission in 2004 ordered a study exploring the consequences that might be expected from a restriction of the use of lead in fishing weights (as well as in ammunition and candle wicks). The European Commission report stated that "it is obvious that reasonable solid arguments related to migratory birds exist for a community wide approach regarding the use of lead split shot and small sinkers for fishing in inland waters."[76] However, no legislative action followed from this study[77] and a 2007 Swedish Chemicals Agency report "(Lead in articles") describes the reasons for this decision as follows:

"[…] the Commission finally considered that the basis for regulating fishing sinkers was too weak and that there could also be problems with some of the alternatives. The only environmental problem identified in the report was the risk of poisoning of seabirds, which the Commission did not consider to be sufficient reason for restriction. The Commission therefore decided not to proceed with any regulation of fishing sinkers in the Limitations Directive. The conclusion drawn by the Commission from the study was instead that the EU should press for lead to be prohibited in the OSPAR convention for the protection of the marine environment in North Atlantic. […] However, the Swedish Chemicals Agency and the Swedish Environmental Protection Agency regard the Commission report as deficient […]."[78]

[72]EFTTA (2005).
[73]Danish Environmental Protection Agency.
[74]European Commission (2004), pp. 13,104, 105.
[75]KemI (2007).
[76]European Commission (2004), p. 118.
[77]Cf. Thomas & Guitart (2010).
[78]KemI (2007), pp. 64f.

3. Effectiveness of existing regulations relating to lead fishing weights

a. United Kingdom

In the United Kingdom, the 1987 ban in England and Wales on the use of smaller sinkers was introduced after previous voluntary measures had proved not to be sufficient.[79] Following the ban, an increase in the mute swan population and a substantial decrease in the lead weights related mortality of swans was reported, for instance with the number of lead-poisoned swans from the River Thames and adjacent waters dropping from 107 in 1984 to 25 in 1988.[80,81] Rowell & Spray (2004) state that "the increase in the British Mute Swan population seen between the 1983 and the 1990 censuses can be explained partly by the ban on the use of lead weights in fishing [..]", with other contributing factors being, e.g. mild winters and an increased availability of suitable habitats.[82]

Despite this encouraging development, surveys carried out after the ban still showed elevated blood lead levels in a high proportion of rescued swans, although it is unclear to what extent these high levels may be resulting from the ingestion of weights lost before the ban came into force or illegally used weights (as well as legally used "dust-shot").[83] In an analysis of fishing weights found in rescued swans, Perrins et al. (2002) discovered that 13.7% of the tackle retrieved included illegal lead weights.[84] A survey of 60 anglers in Stratford, UK, in the year 2000 revealed that only 1 (1.7%) of them was still using illegal lead weights.[85]

b. Canada

Regarding the Canadian ban, which came into force in 1997 and applies to national parks and national wildlife areas only, Thomas and Guitart (2010) note that "[w]hile this is an important legal precedent, the majority of recreational angling occurs outside these federal areas that comprise, geographically, less than 15% of Canada".[86] Scheuhammer et al. (2003) who state that compliance within Canada's national parks is deemed to be high, estimate that these limited regulations, together with local outreach efforts, affect ca. 1% of anglers and have decreased the annual demand of lead weights and jigs by ca. 5 tons only. Most anglers, they state, continue using lead fishing weights.[87] On the same note, Scheuhammer and Norris (1995) conclude that "[f]rom the point of view of [hunter and] angler compliance, effective enforcement, whole sale and retail distribution and sale, and wildlife and ecosystem health, any sort of partial ban on lead shot or small lead sinkers/jigs is a less than ideal solution to the lead poisoning problem […]".

[79]Cf. Kirby et al. (1994) and Scheuhammer & Norris (1995).
[80]Sears & Hunt (1991) as cited in: Rattner et al. (2008), pp. 35f.
[81]Rowell & Spray (2004), p. 9.
[82]Ibid.
[83]Perrins et al. (2003), p. 210.
[84]Perrins et al. (2002) as cited in: Perrins et al. (2003), p. 210.
[85]A. Taylor, pers. comm., as cited in: Perrins et al. (2003), p. 210.
[86]Thomas and Guitart (2010). p. 62.
[87]Scheuhammer et al. (2003). pp. 16 and 39.

IV. Recommendations

Based on existing data and literature, the Technical Committee could recommend to the 5th Meeting of the Parties to AEWA (MOP5):

1) to decide to amend the AEWA Action Plan as follows:

4.1.4 Parties shall endeavour to phase out the use of lead shot for hunting in wetlands and the use of lead fishing weights as soon as possible in accordance with self-imposed and published timetables.

2) To request Contracting Parties to collect and/or publish data on the relevance of fishing with lead weights in their countries, and to inform the Secretariat accordingly e.g. by 30 November 2013 through a written report or questionnaire.

In the case of 1) a draft Resolution could, moreover, include the following action points for the Meeting of the Parties to decide on:

a) to urge Contracting Parties to phase out the use of lead fishing weights as soon as possible, in close cooperation with all interest groups involved including fishing associations, to report to each session of the Meeting of the Parties on progress made in this matter and to stimulate and facilitate the replacement of lead fishing weights by non-toxic weights;

b) to further urge Contracting Parties to establish enforcement procedures in order to assure compliance with an introduced ban;

c) to invite other MEAs to join in a common effort with AEWA to phase out the use of lead fishing weights;

d) to instruct the Secretariat to disseminate information on the problems caused by the use of lead fishing weights on the basis of existing materials on lead shot;

e) to call upon fishing associations and clubs to support and promote the ban;

f) to call upon fishing weight manufacturers and traders to actively promote non-toxic materials.

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3. AEWA Resolutions, Conservation Guidelines and publications on phasing out the use of lead shot for hunting in wetlands

AEWA Resolutions on phasing out lead shot:

- Resolution 1.14 on phasing out lead shot (1999) http://www.unep-aewa.org/meetings/en/mop/mop1_docs/pdf/r14.pdf
- Resolution 2.2 on phasing out lead shot for hunting in wetlands (2002) http://www.unep-aewa.org/meetings/en/mop/mop2_docs/resolutions-word/pdf/resolution2_2.pdf
- Resolution 4.1 on phasing out lead shot for hunting in wetlands (2008) http://www.unep-aewa.org/meetings/en/mop/mop4_docs/final_res_pdf/res4_1_phasing_out_lead_shot_final.pdf

AEWA Conservation Guidelines (as adopted by MOP1 in 1999):

The issue of lead poisoning is addressed in two of the published AEWA Conservation Guidelines:

- Conservation Guidelines on identifying and tackling emergency situations for migratory waterbirds http://www.unep-aewa.org/publications/conservation_guidelines/pdf/cg_2.pdf
- Conservation Guidelines on sustainable harvest of migratory waterbirds http://www.unep-aewa.org/publications/conservation_guidelines/pdf/cg_5.pdf

Other relevant AEWA publications:

- Phasing out the use of lead shot for hunting in wetlands: Experiences made and lessons learned by AEWA Range States
  http://www.unep-aewa.org/publications/popular_series.htm
- Special Newsletter on lead poisoning in waterbirds (2002), available in English, French and Russian at http://www.unep-aewa.org/publications/newsletter.htm
- Technical Series No. 3: Non-toxic shot - A path towards sustainable use of the waterbird resource, available in English and French at: http://www.unep-aewa.org/publications/technical_series.htm
- Three articles published by the AEWA Secretariat and disseminated to hunting magazines: 1. Planting seeds of awareness; 2. Steel shot – some technical and safety aspects; 3. Non-toxic shot is gaining territory; available at http://www.unep-aewa.org/publications/index.htm
- Two update reports on the use of non-toxic shot for waterbird hunting, available at: http://www.unep-aewa.org/publications/sustainable_hunting.htm

Appendix II: List of useful contacts

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