



**SCIENTIFIC COMMITTEE  
SECOND REGULAR SESSION**

7-18 August 2006  
Manila, Philippines

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**INTERACTIONS OF FISHERIES IN THE EASTERN PACIFIC OCEAN AND  
MARINE TURTLES**

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**WCPFC-SC2-2006/EB IP-10**

Paper prepared by

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## **Interactions of fisheries in the eastern Pacific Ocean and marine turtles.**

This paper comprises extracts from the papers presented at the 75<sup>th</sup> IATTC meeting. The complete papers can be found on the [IATTC web site](#).

### **Section 2.6 of Ecosystem chapter from [IATTC-74-04](#)**

#### **Sea turtles**

Sea turtles are caught on longlines when they take the bait on hooks, are snagged accidentally by hooks, or are entangled in the lines. Estimates of incidental mortality of turtles due to longline and gillnet fishing are few. At the [4th meeting of the IATTC Working Group on Bycatch](#) in January 2004, it was reported that 166 leatherback (*Dermochelys coriacea*) and 6,000 other turtle species, mostly olive Ridley (*Lepidochelys olivacea*), were incidentally caught by Japan's longline fishery in the EPO during 2000, and that, of these, 25 and 3,000, respectively, were dead. The mortality rates due to longlining in the EPO are likely to be similar for other fleets targeting bigeye tuna, and possibly greater for those that set lines at shallower depths for albacore and swordfish. About 23 million of the 200 million hooks set each year in the EPO by distant-water longline vessels target swordfish with shallow longlines.

In addition, there is a sizeable fleet of locally-based longline vessels that fish for tunas and billfishes in the EPO. During 2005, the IATTC staff and some other organizations rendered advice and assistance to the governments of several Latin American nations bordering on the Pacific Ocean to reduce the mortality of sea turtles caused by the artisanal longline fishery for tunas and other species. Additional information on this program can be found in Section 8.2.

Sea turtles are occasionally caught in purse seines in the EPO tuna fishery. Most interactions occur when the turtles associate with floating objects, and are captured when the object is encircled. In other cases, nets set around unassociated schools of tunas or schools associated with dolphins may capture sea turtles that happen to be at that location. The olive Ridley turtle is, by far, the species of sea turtle taken most often by purse seiners. It is followed by black or green sea turtles (*Chelonia agassizii*), and, very occasionally, by loggerhead (*Caretta caretta*) and hawksbill (*Eretmochelys imbricata*) turtles. Only one mortality of a leatherback turtle has been recorded during the 10 years that IATTC observers have been recording this information. Some of the turtles are unidentified because they were too far from the vessel or it was too dark for the observer to identify them. Sea turtles, at times, become entangled in the webbing under fish-aggregating devices (FADs) and drown. In some cases, they are entangled by the fishing gear and may be injured or killed. The estimated mortalities<sup>1</sup> (in numbers) of turtles caused by large purse-seine vessels during 2005 were as follows:

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<sup>1</sup> Preliminary estimates based on reports from IATTC observers only. Includes severely injured turtles that are judged to be unlikely to survive.

	Set type		
	OBJ	NOA	DEL
Olive Ridley	4.8	6.3	3.8
Black or eastern Pacific green	1.4	0.0	0.0
Loggerhead	0.0	0.0	0.0
Hawksbill	0.0	0.0	0.0
Leatherback	0.0	0.0	0.0
Unidentified	2.0	7.4	1.8
<b>Total</b>	8.2	13.7	5.6

The mortalities of sea turtles due to purse seining for tunas are probably less than those due to other types of human activity, which include exploitation of eggs and adults, beach development, pollution, entanglement in and ingestion of marine debris, and impacts of other fisheries.

The populations of olive Ridley, black, and loggerhead turtles are designated as endangered, and those of the hawksbill and leatherback turtles as critically endangered, by the International Union for the Conservation of Nature.

### Extract from [Compliance Report COM-7-04](#)

#### REVIEW OF POSSIBLE VIOLATIONS DURING 2005

##### 2.1. Consolidated resolution on bycatch ([C-04-05](#))

There are two compliance elements to be analyzed from this resolution, the requirements to release all bycatch and to retain all tuna caught.

##### 2.1.1. Release requirement

The resolution calls for fishermen to release unharmed, to the extent practicable, all sea turtles, sharks, billfishes, rays, dorado, and other non-target species, with specific requirements for the release of encircled or entangled sea turtles.

##### 2.1.1.a Sea turtles

With respect to sea turtles, the resolution requires that all sea turtles be released by fishermen on purse-seine vessels. More specifically, the resolution calls for the following:

1. Require fishermen on vessels targeting species covered by the Convention to promptly release unharmed, to the extent practicable, all sea turtles.
2. Require specific measures for encircled or entangled sea turtles, as follows:
  - i. Whenever a sea turtle is sighted in the net, all reasonable efforts should be made to rescue the turtle before it becomes entangled in the net, including, if necessary, the deployment of a speedboat.
  - ii. If a turtle is entangled in the net, net roll should stop as soon as the turtle comes out of the water and should not start again until the turtle has been disentangled and released.
  - iii. If a turtle is brought aboard the vessel, all appropriate efforts to assist in the recovery of the turtle should be made before returning it to the water.

The fate of the 1,965 turtles observed involved in 1,350 purse-seine sets of trips starting in 2005; a turtle is considered “involved” if it has any interaction with the purse-seine fishing gear, regardless of whether it was encircled in a set.

	Species Code						Total	%
	GRBL	HWBL	LGHD	LTBK	OLRD	UNID		
Released unharmed	168	8	23	2	952	550	1,703	87%
Escaped	-	1	1	-	23	112	137	7%
Slightly injured	13	-	-	-	35	26	74	4%
Severely injured	-	-	-	-	9	9	18	1%
Left entangled	-	-	-	-	-	1	1	0%
Accidentally killed	1	-	-	-	2	3	6	0%
Treated as catch	-	-	-	-	-	1	1	0%
Other/Unknown	1	-	-	-	4	20	25	1%
<b>Total</b>	183	9	24	2	1,025	722	1,965	

Fate of sea turtles involved in purse-seine sets, 2005

Code	Name	Scientific Name
GRBL	Black/Green turtle	<i>Chelonia mydas mydas</i> , <i>C. m. agassizii</i>
HWBL	Hawksbill turtle	<i>Eretmochelys imbricata</i>
LGHD	Loggerhead turtle	<i>Caretta caretta</i>
LTBK	Leatherback turtle	<i>Dermochelys coriacea</i>
OLRD	Olive ridley turtle	<i>Lepidochelys olivacea</i>
UNID	Marine turtles, nei	

Marine turtle codes and names

**TABLE 2.1.** Fate of sea turtles involved in purse-seine sets, 2005

Clearly, turtles that are consumed or treated as catch constitute a contravention of the resolution; in 2005 there was one such case (compared with one case in 2004 and two in 2003). In that particular instance, the observer reported that the turtle went into the well and there was no effort to release it. The staff has notified the government of the vessel involved.

The number of accidental mortalities of turtles involved in the fisheries was seven, compared to two in 2004 and five in 2003. These accidental mortalities are included in this report and in the tables. On all but one occasion, there were no compliance issues associated with the accidental mortality. In that case (the turtle ‘treated as catch’ in Table 2.1), the mortality was caused by the failure to assist the turtle when it was brought aboard the vessel.

Table 2.2 indicates the fate of four turtles that passed through the power block in four sets in 2005. In comparison, six turtles were reported in this category in 2004 and eight in 2003. The staff sent letters to the flag states involved for all four of these cases.

It should be noted that observers make an assessment of the condition of all turtles involved in sets, and specifically those passed through the power block, but do not have the time or specialized knowledge necessary to make a thorough examination.

Released unharmed	-
Slightly injured	-
Severely injured	2
Killed	-
Consumed	-
Other/Unknown	2
<b>Total</b>	<b>4</b>

**TABLE 2.2.** Fate of sea turtles passed through power block, 2005

As indicated in Table 2.1, observers reported that, of the 1,965 turtles involved in purse-seine sets, 1,840 (94%) were released unharmed or escaped uninjured. Of the remaining 125 turtles, 92 (5%) suffered injuries, 18 severe and 74 slight, and 7 (<1%) died in the course of the set. In 2004 the corresponding numbers were 1,213 (93%), 77 (6%) and 2 (<1%), and in 2003, 1,421 (91%), 117 (8%) and 5 (<1%).

On eleven occasions (including the four referred to in Table 2.2) the requirement to stop net roll was not complied with, resulting in seven injuries, four severe and three slight.

Sea turtles can also become entangled in webbing discarded at sea or webbing hung under fish-aggregating devices (FADs). The fate of the 28 turtles that were found entangled alive in a FAD prior to the set (21 sets) is shown in Table 2.3.

Fate of the 1,965 turtles observed involved in 1,350 purse-seine sets of trips starting in 2005; a turtle is considered “involved” if it has any interaction with the purse-seine fishing gear, regardless of whether it was encircled in a set.

	Species Code						Total	%
	GRBL	HWBL	LGHD	LTBK	OLRD	UNID		
Released unharmed	168	8	23	2	952	550	1,703	87
Escaped	-	1	1	-	23	112	137	7
Slightly injured	13	-	-	-	35	26	74	4
Severely injured	-	-	-	-	9	9	18	1
Left entangled	-	-	-	-	-	1	1	0
Accidentally killed	1	-	-	-	2	3	6	0
Treated as catch	-	-	-	-	-	1	1	0
Other/Unknown	1	-	-	-	4	20	25	1
<b>Total</b>	<b>183</b>	<b>9</b>	<b>24</b>	<b>2</b>	<b>1,025</b>	<b>722</b>	<b>1,965</b>	

Fate of sea turtles involved in purse-seine sets, 2005

Fate of the 28 turtles that were found entangled alive in webbing hung under fish-aggregating devices (FADs), prior to the set (21 sets):

	Species Code			Total	%
	GRBL	OLRD	UNID		
Released unharmed	-	6	4	10	36
Released – slight injuries	1	4	-	5	18
Released – severe injuries	-	-	2	2	7
Left entangled alive	-	-	2	2	7
Other/Unknown	-	1	8	9	32
<b>Total</b>	<b>1</b>	<b>11</b>	<b>16</b>	<b>28</b>	

**TABLE 2.3.** Fate of sea turtles found entangled alive in webbing in FADs involved in sets, 2005

Not releasing a turtle that has become entangled in the FAD, while performing a set on this FAD, apparently is not a clear violation of the Resolution. The Parties may wish to consider amending the Resolution to clarify that this would be a violation.

Observers also record sightings of turtles entangled in netting associated with floating objects on which no set is made. The 170 turtles involved in the 134 sightings recorded in 2005 (excluding

turtles recorded as previously dead) are broken down in Table 2.4 by the action taken by the crew after the sighting.

Sightings of turtles entangled in netting associated with floating objects on which no set is made. The 170 turtles involved in the 134 sightings recorded in 2005 (excluding turtles recorded as previously dead) are broken down in Table 2.4 by the action taken by the crew after the sighting.

	Species Code						Total	%
	GRBL	HWBL	LGHD	LTBK	OLRD	UNID		
Released unharmed	12	1	1	-	17	69	100	59
Released – slight injuries	3	-	-	1	9	21	34	20
Released – severe injuries	1	-	1	-	3	14	19	11
Left entangled alive	-	-	-	-	3	14	17	10
Other/Unknown	-	-	-	-	-	-	-	-
<b>Total</b>	<b>16</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>32</b>	<b>118</b>	<b>170</b>	

**TABLE 2.4.** Fate of sea turtles sighted entangled in webbing (no set), 2005

Code	Name	Scientific Name
GRBL	Black/Green turtle	<i>Chelonia mydas mydas</i> , <i>C. m. agassizii</i>
HWBL	Hawksbill turtle	<i>Eretmochelys imbricata</i>
LGHD	Loggerhead turtle	<i>Caretta caretta</i>
LTBK	Leatherback turtle	<i>Dermochelys coriacea</i>
OLRD	Olive ridley turtle	<i>Lepidochelys olivacea</i>
UNID	Marine turtles, nei	

Marine turtle codes and names

Observers reported a total of 17 turtles left entangled in 134 sightings of FADs that were not set on, as compared to 26 turtles in 124 sightings in 2004 and 25 turtles in 183 sightings in 2003.

Table 2.4 does not include sightings of previously dead turtles entangled in floating objects reported by observers, because there are no compliance issues associated with this. Although it cannot be known for certain, it seems likely that these turtles die as a result of becoming entangled and, since FADs are not marked, it is possible that some of these were reported more than once by different observers. It is also possible that additional unobserved mortality of turtles occurs in floating objects.

In terms of compliance, the staff identified three different categories of violations of the sea turtle release requirements which occurred during 2005 trips:

1. Turtles retained on board the vessel or treated as catch;
2. Failure to stop net roll to release turtles;
3. Failure to release a turtle entangled in a FAD during a set.

Table 2.5 reflects the violations recorded by IATTC observers and reported to the pertinent national authorities.

Turtle retained aboard	Failure to stop net roll	Failure to disentangle
1	11	1

**TABLE 2.5.** Violations involving sea turtles reported to national authorities, 2005

With respect to turtles entangled in FADs, the operative part of the resolution reads: “To encourage the release, when practicable, of sea turtles entangled in FADs.” It is thus not necessarily a violation of the resolution not to release an entangled turtle. However, in most cases it is practical to release entangled turtles; the vessel is usually stopped, checking the FAD or preparing to set when the observation is made, and it would be relatively easy to deploy a crew member on a suitable platform to release the turtle.