

# Shannon dolphin tour boat monitoring report – 2006

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## **Introduction**

The Shannon estuary is a candidate Special Area of Conservation (cSAC) for bottlenose dolphins *Tursiops truncatus*. Commercial dolphin-watching is carried out within the estuary and is listed as a Notifiable Activity by the National Parks and Wildlife Service (NPWS). Consent is therefore required from the NPWS to those operators wishing to dolphin-watch within the cSAC. All operators receiving consent are required to “provide monitoring data for each trip in the prescribed form as outlined in the data sheet Tour Boat Monitoring Protocol 2000”.

The Shannon Dolphin and Wildlife Foundation (SDWF) were contracted by National Parks and Wildlife Service to carry implement this monitoring during the 2006 season.

## **Methodology**

Operators (see Appendix I for list of accredited operators for 2006 season) are required to fill out a log-sheet for each dolphin-watching trip they carry out. Each log-sheet prompts for information on trip length, time to locate dolphins, number of groups and dolphins observed, presence and estimated number of calves, location of dolphins and the time for which each group was watched. Following recommendation 1 in 2005 the log sheets were redesigned, which resulted in one for the inner estuary and one for the outer estuary to ensure operators can plot their route and the location of dolphins watched, as accurately as possible (see Appendix II).

Photo-identification is carried out on a sample of trips (target 10% of total trips) to determine which dolphins are being watched from tour boats. This also provides an opportunity to cross reference operator’s records with SDWF records to assess there interpretation of the monitoring indices that they are required to record.

## **Results**

Of the 403 log-sheets received during 2006, 27 (7%) log-sheets had some data missing (on 22 trips from Kilrush and 5 from Carrigaholt). Most of the missing data from Kilrush (86%) was seastate, which is of no great significance. Only on seven trips from Kilrush and one trip from Carrigaholt was important data missing. During 2006, 43 trips were accompanied (23 from Kilrush and 21 from Carrigaholt) which was 10.7% of the total carried out. This exceeded the target of 10% for the season. Eight monitoring indices were collected during 2006 and are presented below.

### 1. *Number of operators and trips*

Five companies/individuals operating up to seven dolphin-watching vessels were given consent by the NPWS to dolphin-watch in the Shannon estuary cSAC during 2006 (Appendix I). Lisroe Marine Services from Kilrush and Robert Stack who operates from Doon near Ballybunion, Co Kerry did not carry out any trips during 2006.

During the 2006 season trip records were received for a total of 403 trips. No trip records were received from Michael Fennell when the final report was drafted (14 December, 2006). An estimated 20 additional trips from this operator could be added to the total. The total reported number of trips (403) were 11 (2.6%) less than in 2005 with trips from Carrigaholt down 4.2% and Kilrush up by 1.5%. Poor weather in July reduced the trip numbers in this month but operators largely made up for this decrease by increasing trip numbers in August, especially from Carrigaholt.

Of the total number of trips, 205 (50.8%) departed from Carrigaholt and 198 (49.0%) departed from Kilrush in County Clare (Table 1). Two trips were carried out in November, which is after the permitted period stated by the NPWS (1 April – 31 October). As with all previous seasons, two-thirds of trips (64.5%) were carried out during July and August.

**Table 1. Number of dolphin-watching trips carried out from two ports in County Clare in the Shannon estuary during 2006**

Month	Port		Total (%)
	Carrigaholt	Kilrush	
April	18	13	31 (7.7)
May	10	10	20 (4.9)
June	25	31	56 (13.9)
July	55	52	107 (26.5)
August	85	68	153 (37.9)
September	11	17	28 (6.9)
October	1	5	6 (1.5)
November	0	2	2 (0.5)
<b>Total</b>	<b>205</b>	<b>198</b>	<b>403</b>

### 2. *Length of trip*

The mean length of each dolphin-watching trip was remarkable similar (within 1 minute) between the two main operators. Despite an increase (8.8%) in trip length from Kilrush compared with the 2005 the general trend was for trip length to decrease each year. Trip length from Carrigaholt was very consistent (Table 2).

**Table 2. Mean length (minutes) of dolphin-watching trips from 2000 – 2006**

Port	Year					
	2000	2001	2002	2003	2005	2006
Carrigaholt	119.6	124.9	123.6	117.8	118.6	119.1
Kilrush	133.1	129.7	125.6	115.2	110.6	119.7

### 3. *Time to locate dolphins*

Dolphins were located on 99% of trips overall with only three trips from Carrigaholt and one trip from Kilrush failing to locate dolphins. The mean time to locate dolphins was greater from Kilrush, which is consistent with previous years and very similar to 2005. The time to locate from Carrigaholt was longer than in previous years (20% greater than 2005) and the highest since monitoring began from this port in 2000.

**Table 3. Mean time (minutes) to locate dolphins from the two ports during the 2006 season (only those trips which located dolphins are included)**

Month	Carrigaholt	Kilrush
April	49.1	32.5
May	27.8	46.0
June	20.5	35.7
July	24.1	40.0
August	23.7	43.4
September	33.1	58.0
October	32.0	51.0
November	-	22.5
<b>Mean</b>	<b>30.0</b>	<b>37.4</b>

### 4. *Location of dolphin groups*

The tour boat operating from Carrigaholt located most dolphins in Zones 1 (57.5%) and 3 (22.9%) (Table 4), which is consistent with most previous years including 2005 (see Appendix III for location of Zones). Four boats from Kilrush tended to watch dolphins in Zones 7 (33%), 6 (29%), and 3 (15%). There was an increase in trips to Zone 4.

This continues the trend observed in 2005 with the proportion of trips to Zones 7 and 3 continuing to decrease. Thus the vessel from Kilrush was tending to spend more time upriver around the Shannon ferry and less time heading west. However a similar proportion of trips to previous years overlap with vessels from with the Carrigaholt in Zone 3 (Beal Bar).

**Table 4: Zones in which tour boats watched dolphins from each port during 2006 (see Appendix II for map)**

Zone	Carrigaholt	Kilrush	Total
	No. (%)	No. (%)	No. (%)
1	118 (57.5)	2 (1.0)	120 (30.3)
2	37 (18.0)	2 (1.0)	39 (9.8)
3	47 (22.9)	29 (14.9)	78 (19.7)
4	-	33 (17.0)	33 (8.3)
5	-	7 (3.6)	7 (1.7)
6	-	57 (29.4)	57 (14.4)
7	-	64 (33.0)	64 (16.2)
Total	202	194*	396

\* 4 trips from Kilrush with zone not recorded

### 5. Time on dolphins

The total time on dolphins for all vessels during 2005 was calculated as 13,154 minutes or 219.5 hours (Table 5). This is an overall increase of 12% on 2005. The increase was greater from Kilrush vessels (24%) compared with Carrigaholt vessels (1.6%). The requirement to spend only 30 minutes per group per trip was exceeded on 2 (0.5%) occasions from Carrigaholt, but only by 1 and 10 minutes but on 128 (60.6%) occasions from Kilrush, with a maximum of 60 minutes on one group of dolphins.

**Table 5. Total time (minutes) on dolphins from the two ports during 2006 season (different groups observed within a time are indicated)**

Month	Carrigaholt					Kilrush				
	G1	G2	G3	G4	Total	G1	G2	G3	Total	Total
April	307	178	24	0	<b>509</b>	382	15	0	<b>397</b>	<b>906</b>
May	172	34	3	0	<b>209</b>	275	75	45	<b>395</b>	<b>604</b>
June	405	242	86	0	<b>733</b>	1197	60	0	<b>1257</b>	<b>1990</b>
July	860	778	146	11	<b>1795</b>	1922	25	0	<b>1947</b>	<b>3742</b>
August	1740	548	98	31	<b>2417</b>	2251	65	15	<b>2331</b>	<b>4748</b>
September	217	153	13	0	<b>383</b>	501	0	0	<b>501</b>	<b>884</b>
October	30	0	0	0	<b>30</b>	175	0	0	<b>175</b>	<b>205</b>
November	0	0	0	0	<b>0</b>	75	0	0	<b>75</b>	<b>75</b>
Total										
-minutes	3731	1933	370	42	<b>6076</b>	6778	240	60	<b>7078</b>	<b>13154</b>
-hours	62.1	32.1	6.1	0.4	<b>100.7</b>	112.9	4	1	<b>117.9</b>	<b>219.2</b>

The mean time on dolphins per group per trip was 15.9 minutes from Carrigaholt, and 34.5 minutes from Kilrush. Thus the Kilrush boats do spend greater than 30 minutes per group per trip however the overall average time per group per trip from both ports combined was 22.4 minutes, which is within the time allowed under the Code of Conduct.

### 6. *Number of dolphins and groups*

As in previous seasons, the tour boat from Carrigaholt tended to watch more groups of dolphins on each trip (Table 6) compared to Kilrush. The number seen per trip from Carrigaholt was slightly down on 2005 (2.1 compared with 2.2). The mean number of groups watched from Kilrush was consistent at 1.1 groups per trip. The mean group size was greater from Kilrush (12.5) compared with Carrigaholt (9.9), which is similar to 2005. However 2005 reversed the previous trend and this year (2006) reinforces the opinion that there has been a reduction in the group size in the outer estuary with an increase in the inner estuary. In previous years (2000-2003) the mean group size in September and October was higher from both ports than earlier in the season but this trend was not apparent in 2005-2006 from Carrigaholt.

**Table 6. Mean number of dolphin groups and group size encountered during 2006**

Month	Carrigaholt		Kilrush	
	Group	Group size	Group	Group size
April	1.9	8.7	1.1	9.3
May	1.8	9.3	1.5	9.9
June	2.4	11.4	1.0	8.4
July	3.2	10.8	1.0	10.5
August	2.0	9.1	1.1	10.4
September	2.4	10.5	1.0	12.8
October	1.0	10.0	1.0	13.6
November	-	-	1.0	25.0
<b>Mean</b>	<b>2.1</b>	<b>9.9</b>	<b>1.1</b>	<b>12.5</b>

### 7. *Number of groups with calves*

Of the 204 trips from Carrigaholt with data calves were present on 138 (68%). From Kilrush, calves were present on 60% of the 165 trips where this data were collected. These data do show that breeding groups are subjected to dolphin-watching in the Shannon estuary, especially from Carrigaholt.

### 8. *Individual dolphins watched from tour boats*

Whenever possible, the individual dolphins watched from tour boats were recorded using photo-identification. During 2006, 43 trips were sampled (23 from Kilrush and 21 from Carrigaholt), which was 10.7% of the total carried out (Table 7). Dolphins were observed all trips sampled.

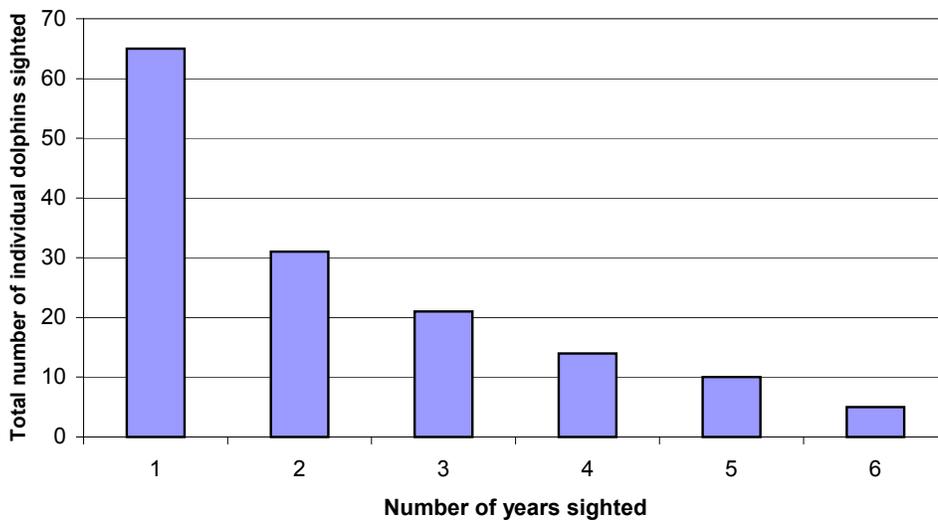
The SDWF catalogue contains images from 200 individual dolphins. A total of 61 individual dolphins were identified from tour boats during 2006 and of these 37 (61%) had been previously recorded (Figure 1) and 24 were previously unrecorded. The large number of 'new' dolphins in the catalogue can be explained by the use since 2005, of digital photography.

**Table 7: Number of identifiable dolphins recorded from tour boats, 1999-2006**

Year	No. of trips	No. of identified dolphins	Number (%) of dolphins recorded from tour boats in previous years					
			1999	2000	2001*	2002*	2003	2005
1999	11	22	-	-	-	-	-	-
2000	25	35	13 (37%)	-	-	-	-	-
2001	27	33	10 (30%)	19 (58%)	-	-	-	-
2002	31	42	11(31%)	18 (50%)	24 (67%)	-	-	-
2003	57	86	13 (15%)	31 (38%)	39 (45%)	32 (37%)	-	-
2005	43	68	13 (19%)	21 (31%)	20 (30%)	22 (32%)	39 (57%)	-
2006	43	61	6 (9.8%)	15 (24%)	19 (31%)	18 (30%)	30 (49%)	35 (57%)

\* the 2002/2003 column figure has changed from previous reports after some previous dolphins were merged or removed

Of those dolphins identified, just over one-half (57%) were also recorded from tour boats in 2005 and 49% during 2003 (Table 7). This suggests that the same dolphins are watched each year from tour boats and this trend is consistent. The proportion of dolphins re-sighted each year is shown in Figure 1. This shows that most dolphins are recorded only once with a corresponding decrease with time. Only five individual dolphins have been recorded each year, 1999-2005 and 10 in five of the previous 6 years (Appendix IV).



**Figure 1. Frequency of re-sightings of individual dolphins over a six year period (1999-2006)**

#### **Comparison between SDWF data and operators logbooks**

Data from monitoring forms received from each operator were compared with data recorded by the SDWF for the same trip. This enabled a comparison to be made between the operators interpretation of

the monitoring data with that made by the SDWF researchers. On the vessel from Carrigaholt (Draioicht) the observer is on the main deck and has little contact with the skipper who is in an elevated wheelhouse, thus there is no possibility of one passing on information to the other. This is not the case on the Kilrush boat (Dolphin Discovery) where observer and skipper/deck hand are in close proximity. A summary of this comparison is shown in Table 8. Only differences in the most important monitoring indices are shown.

**Table 8: Differences in data collected by tour operators and the SDWF on the same trip**

Monitoring Index	Dolphin Discovery (n=23)	Draioicht (n=20)	Mean (n=44)
Time to locate dolphins (mins)	5.08	4.47	4.7
Number of groups	0.47	2.09	1.3
Group size	4.04	6.19	5.1
Time on dolphins (mins)	10.1	10.9	10.5

On 6 trips SDWF recorded a longer duration to find dolphins than Dolphin Discovery (total 32 mins; mean of 5.3 mins) and 13 trips on Draioicht (total 43 mins; mean of 3.3 mins). On 12 trips Dolphin Discovery took longer than SDWF to find dolphins (total 85 mins; mean of 7.1 mins) and also on 7 trips on Draioicht (total 50 mins; mean of 7.14 mins). On six trips from both ports there was no difference between the time taken to find dolphins as recorded by SDWF and the operator. The mean difference in recorded trip length from both ports was around 5 minutes. This reflects the variability between skipper and observer in their ability to detect dolphins, especially on Draioicht where the skipper has the advantage of increased elevation, and also in deciding when a vessel is actually on dolphins.

The large difference in the number of groups observed and group size from Carrigaholt reflects the difficulties in defining when a group starts and finishes in the outer estuary. This has been an ongoing problem.

Probably the most important index presented here is the difference in time on dolphins. A mean difference of 10 minutes is significant when the maximum allowed is only 30 minutes per group per trip. Again this might reflect the difficulties when an encounter with dolphins starts and finishes as such encounters can be fluid without a simply definable start and finish.

### Summary and Conclusions

This is the seventh season of monitoring dolphin tour boats in the Shannon estuary. Trip records were received from 403 dolphin-watching trips, which was only 2.6% less than 2005, however if the extra 20 trips carried out by the operator in Kilbaha is included then the decrease is only 1.8%. This follows a

trend with trip numbers down each year since 2001. The recommendations from 2005 have largely been adopted which has led to nearly a full dataset from which to derive monitoring indices.

The length of trip was consistent with previous years but the time to locate dolphins from Carrigaholt increased by 20%. There was little change from Kilrush. There was also a slight change in the location in the estuary where dolphins were observed with a switch from Zone 1 to Zones 2 and 3 from Carrigaholt and a switch from Zone 3 to Zones 6 and 4 from Kilrush. Group size was down from Carrigaholt and up from Kilrush. This is supported by information from the operator in Kilrush who consistently found large groups of dolphins upriver around the Shannon ferry, which meant fewer trips were made to the west into Zone 3.

The data from the photo-identification was consistent with nearly two-thirds of dolphin observed were the same dolphins in the previous year. The total number of hours on dolphins increased during 2006 to nearly 220 hours. Some of this increase can be attributed to poor record keeping during 2005, which resulted in a lower figure than actually occurred. The figure from 2006 was more consistent with 2002 and 2003. Trips from Kilrush exceeded the recommended allowance of 30 minutes per group per trip on 60% of occasions but some of this could be explained by the difficulties in determining when an encounter starts and finishes.

The figures presented for 2006 are consistent with the trends identified in 2005 where, for the first year, there were some notable changes in the monitoring indices. Most pronounced is an apparent shift in the distribution of dolphins from the outer to the inner estuary, resulting in increasing group size and encounter rate. Clearly there are inter-annual changes in the distribution and group composition of dolphins in the estuary and only continuation of long-term monitoring will help to understand trends.

## **Recommendations**

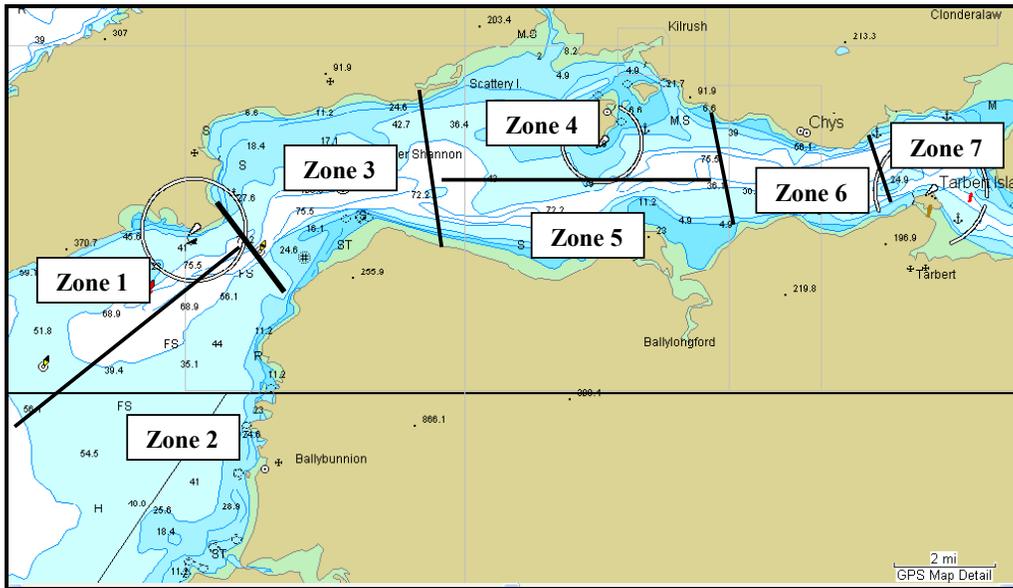
The following recommendations for the 2007 season should be considered:

- i) All operators are requested to send in complete monitoring forms one month after the season is finished (end of November). If possible forms should be sent in during the season to facilitate better sampling of commercial trips.
- ii) Operators from Kilrush are asked to respect the recommended maximum time on dolphins of 30 minutes per group per trip.
- iii) Given the trends in the monitoring data presented here, it is recommended that a detailed analysis of the monitoring data is carried out, examining inter and intra-annual trends.

**Appendix I: Vessels given permission to operating dolphin-watching trips in the Shannon estuary during 2006**

<b>Company</b>	<b>Port</b>	<b>Vessel</b>	<b>Number of trips</b>
Dolphinwatch	Carrigaholt	Draoicht	205
Scattery Island Ferries	Kilrush	Dolphin Discovery	198
Michael Fennell	Kilbaha	Deva	c.20 (estimate)
Lisroe Marine services	Kilrush	Rouge Trader	0
Robert Stack	Ballybunnion	Lady Elish	0

**Appendix III: Tour boat monitoring form, showing zones in which dolphins were watched**



**Zone 1:** line from Kilcredaun to Kilconly Point and north of line down middle of estuary

**Zone 2:** line from Kilcredaun to Kilconly Point and south of line down middle of estuary

**Zone 3:** between line from Kilconly Point and from Corlis Point to Littor House

**Zone 4:** north of line down middle of estuary and between line from Corlis Point to Littor House and from Moyne to Knockfinglas Point

**Zone 5:** south of line down middle of estuary and between line from Corlis Point to Littor House and from Moyne to Knockfinglas Point

**Zone 6:** between line from from Moyne to Knockfinglas Point to a line between Besborough and Hassey's Hill

**Zone 7:** upriver of a line between Besborough and Hassey's Hill

## Appendix IV: Individual dolphins recorded from tour boats 1999-2005

Identification No	Year						Total years sighted	
	1999	2000	2001	2002	2003	2005		2006
1		*			*	*	*	4
2			*	*	*	*	*	5
4	*	*			*			3
5						*		1
6		*			*		*	3
7			*	*		*		3
8	*	*	*	*	*	*	*	7
9							*	1
10				*	*			2
11	*	*	*	*	*	*	*	7
13						*		1
14				*	*			2
15						*		1
16				*	*			2
18		*	*	*	*	*	*	6
19	*	*	*	*	*	*	*	7
20		*		*	*	*		3
21				*	*	*	*	4
23			*		*			2
24		*	*		*	*	*	5
27	*			*	*	*		4
28	*	*	*	*	*	*		6
30		*						1
31					*	*	*	3
33		*	*		*			3
34	*	*	*	*	*	*	*	7
35		*	*	*	*			4
36		*	*	*	*			3
38	*		*		*			3
40		*		*				2
41		*	*		*			3
42		*				*	*	3
43				*				1
44	*		*	*				3
45				*	*	*	*	4
46						*		1
47	*	*	*	*				4
49			*	*	*			3
50				*	*			2
51				*	*	*	*	4
52	*	*			*	*	*	5
53	*		*	*	*			4
54	*	*	*		*	*		5
55	*	*			*	*		4
56					*			1
57	*			*		*		3
58	*							1
59		*	*	*	*	*		5
60	*	*		*	*	*		5
61		*		*				2
62	*	*	*	*	*		*	6
63		*						1
64		*	*	*	*	*		5
65		*						1

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66		*		*	*		*	4
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69					*			1
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71		*			*	*		3
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75					*			1
76				*	*	*		3
77	*	*		*	*			4
78		*						1
79					*			1
80		*	*	*	*	*	*	6
81					*	*	*	3
82	*			*	*			3
83	*	*	*		*	*		5
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85		*			*	*	*	4
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89			*			*		2
90			*		*			2
91				*				1
92			*	*	*			3
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125					*		*	2
126					*	*	*	3
128		*						1

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129	*						1
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198						*	1
200						*	1

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