IBM Photo-ID of Western Gray Whales on the northeastern shelf of Sakhalin Island: 2002-2006

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Field work conducted from two vessel platforms (in turn): Zodiac deployed from vessel

Photo-ID Team in Zodiac

Photo-ID Team:

Dr. Yury Yakovlev: team lead/photographer
Nikolai Prokhorov: driver
Nikolai Selin: videographer
Konstantin Drozdov/Alexander Kalachev: scribe

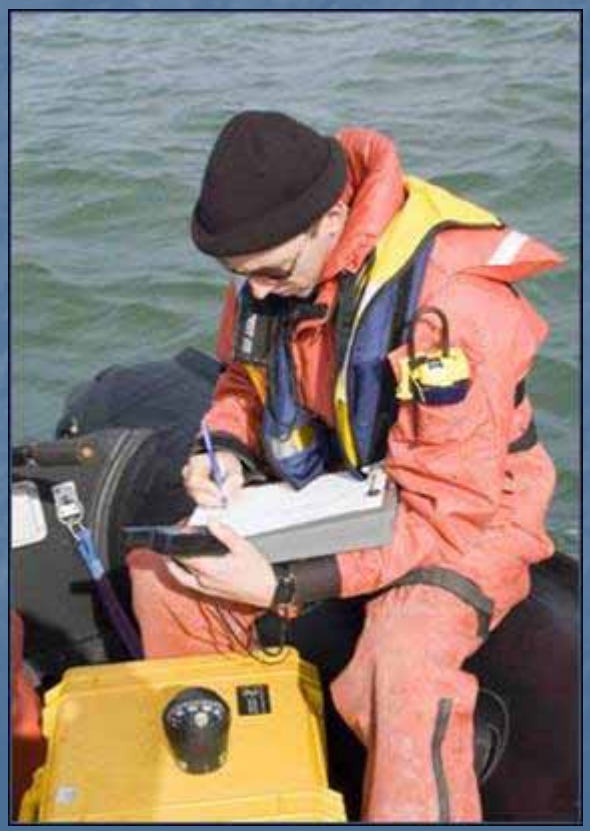
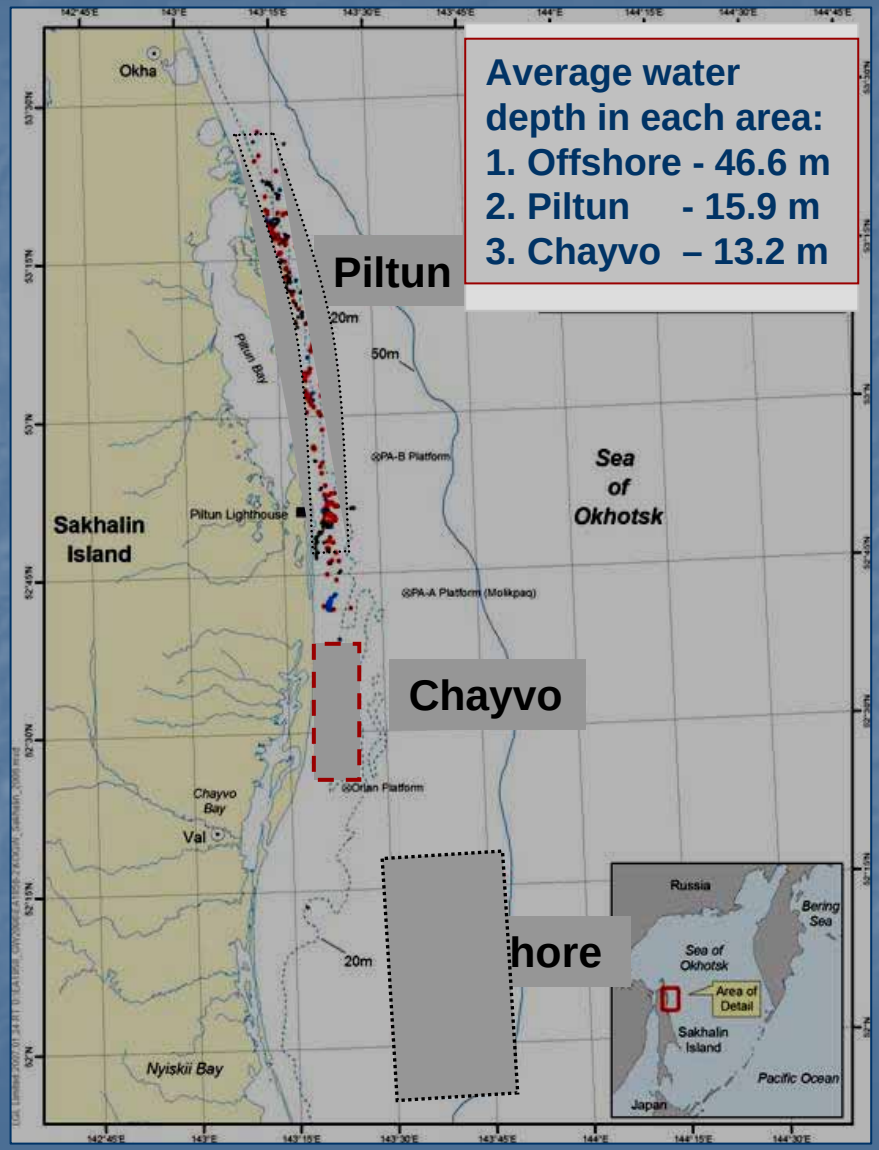


Photo-ID Survey Areas

- Observations done from port to port
- Two Feeding Areas
  - Piltun feeding area
  - Offshore feeding area
- Same grids are covered by vessel and benthic prey sampling
- Opportunistic photo-ID:
  - From the deck of the main vessel
  - Performed when whales sighted & logistics and safety protocols allow for zodiac surveys
- In 2006 whales were **opportunistically** observed in the Chayvo area (red box -- region between Piltun & Offshore)



Field Survey Methodology

- **Vessel observations together w/ vessel based distribution study**
- **Zodiac launch prepared when whales sighted from 'mother' ship**
- **Photo-ID team deployment**
- **Zodiac approaches whale group & documents group size, env't parameters (location, wind speed, distance, depth, temp) & whale behavior from a distance ≥ 100 m (a distance of 500 m is generally maintained)**
- **Whales photographed from different aspects**
- **Maximum time spent with individuals & groups set at 1 hr w/ 30 min generally spent w/ cow-calf pairs**
- **Data transfer back to the vessel for subsequent benthic sampling and sub-sea video survey**
- **Data collected is uploaded to data base and backed-up onto external drives and CD/DVD disks**

Photo Aspects Collected in the Field

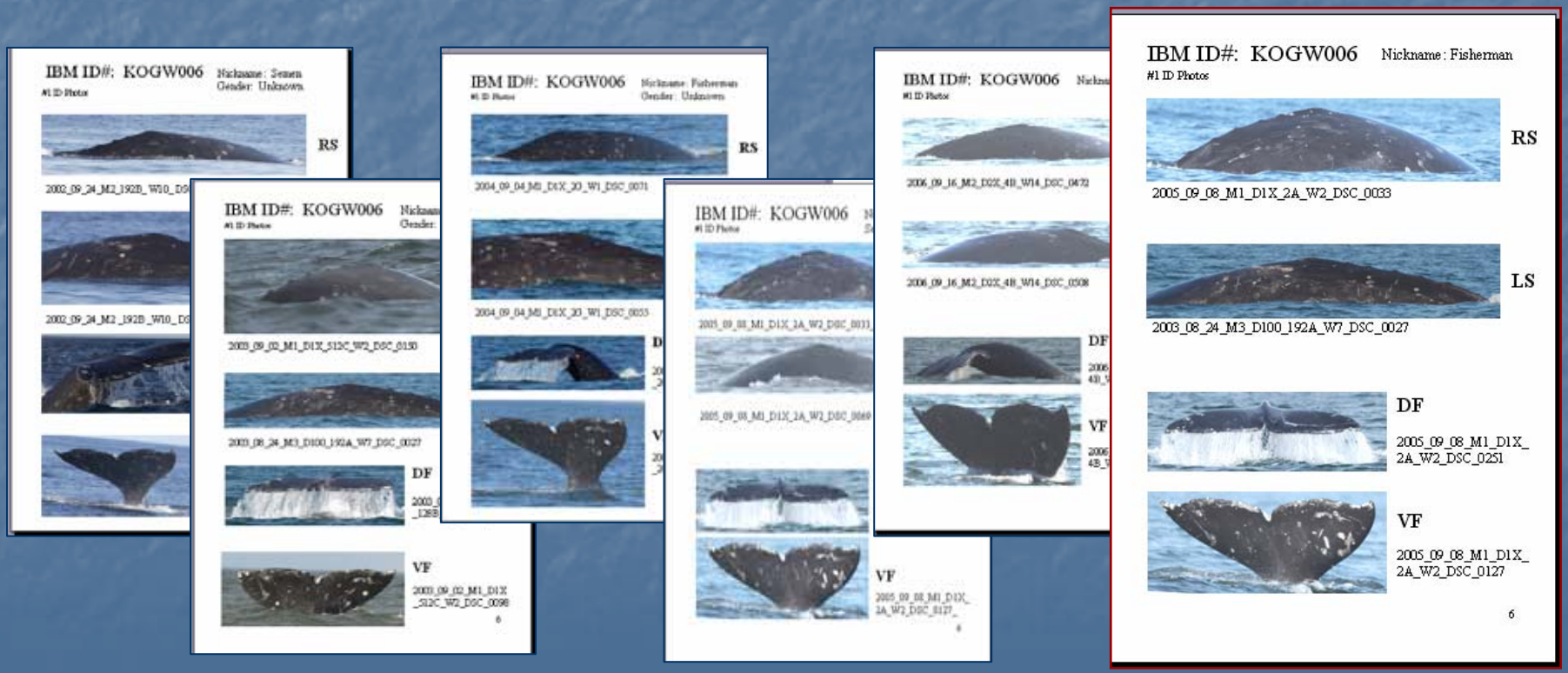
The images are processed in photo editing software

Photo-ID Matching

Every image is studied and matched against the pictures of identified whales. The field number is retained. Cues like spots patterns, skin damages, scars, predation signs, barnacles, lice are used.

Selection of Best photos

1. **For each individual whale sighting the best photo(s) of each available aspect are selected and placed in an annual pre-catalogue (sighting catalogue).**
2. **For each individual whale, the best photo(s) of each available aspect photographed during the season are placed in an annual catalogue.**
3. **The Master Catalogue contains the best representative photo of each individual whales for all available aspects to date. The MC is updated annually with better photos when available.**

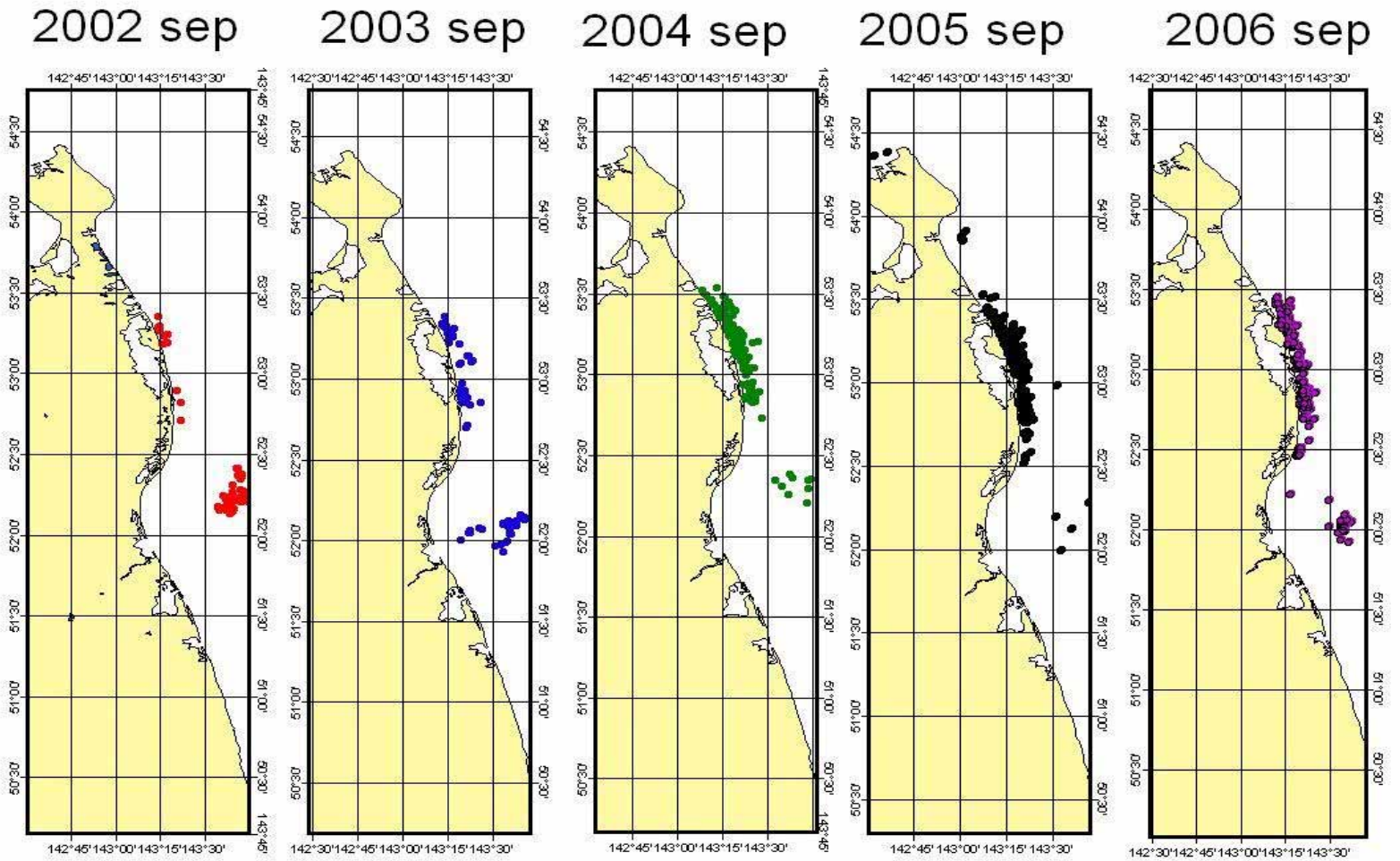


Identified Whales on the northeastern shelf of Sakhalin Island 2002-2006

Year	No. of whales (total for each year)	ID'd from 2002	ID'd from 2003	ID'd from 2004	ID'd from 2005	No. of new whales per year	Whales from previous years not observed in each year	Total No. whales in catalogue
А	Б=В+Г+Д+Е+З	В	Г	Д	Е	З	И	Ж=Б+И
2002	45(1)*					45(1)		45(1)*
2003	80(1)*	34				46(1)	12(1)	92(2)*
2004	95(1)*	38	32(1)			25	21(1)	116(2)*
2005	117(1)*	41	37(1)	19		20	18(1)	135(2)*
2006	120(6)*	42	37	15	14	12(6)	27(1)	147(7)*

* - Values in parentheses в show no. of whales with temporary ID. A Temp # is assigned to a whale in the event there is no reliable image of the right side. Such whales are logged in the annual catalogue, yet not included into the updated master catalogue.

Distribution of gray whales in feeding areas on the northeastern shelf of Sakhalin Island based on results of Photo-ID efforts in September 2001-2006.



Whale Movements Between Feeding Areas on the Sakhalin Island : 2002-2006

Year	Whales ID'd in Piltun area	Whales ID'd in Offshore area	Whales ID'd in both areas P/O	Whales ID'd in Chayvo area	Whales ID'd in other areas P/C(O/C)	Whales ID'd in the North N	Whales ID in other areas per year P/O/C/N
2002	12(11)	35(34)	1			-	-
2003	51(47)	34(31)	4			-	-
2004	95(89)	7(1)	6			-	-
2005	115(112)	7(2)	5			5(1)	4
2006	105(67)	33(14)	16	28(7)	19(1)		2

Only in Piltun

Only in Offshore

Only in Chayvo

Only in North

From 2002-2006 63 individuals whales used multiple feeding areas (P/O/C/N) within and between summer seasons.

Mother /Calf Pairs

Year	Total no. of whales identified	No. Mother-calf pairs identified
2002	45(1)	3
2003	80(1)	11
2004	95(4)	2
2005	117(1)**	4
2006	120(6)**	3(2)*

***Values in parentheses show no. of whales with temporary ID*

The current study monitors the number of cows with calves

In addition to monitoring the size of this population, it is very important indirectly to determine whale's health status through external physical indicators such as body weight and skin condition.

Other matching procedures

- **If another research team has photos of sufficient quality (especially if the whale was not encountered by IBM team) the photos will be added to the Master catalogue (referencing the author)**

- **If whales are encountered in a new region (beyond the feeding area of the north-west shelf of Sakhalin island) a new regional catalogue is created. If a specific individual whale is encountered in both regions, it is assigned a dual ID (for both catalogues)**

- **If the only available photos of an individual whale are of the left side (and possibly ventral and dorsal flukes), but there is no suitable right side photo, the whale is assigned a temporary ID # until new data can be obtained**

Gray whale photo-identification in South-East Kamchatka,Russia 2004-2006

Team:
Vertyankin Vladimir photographer
Vladimirov Valery – Data scribe (VNIRO)
Vertyankin Yury Data processing IBM DVO RAN
Tyurneva Olga – laboratory identification.

Gray whale sightings on south-east Kamchatka peninsula, 2004 and 2006.

2004:

- 2 days photo-ID effort Khalatyrsky beach (July & August)
- 3 whales identified

2006:

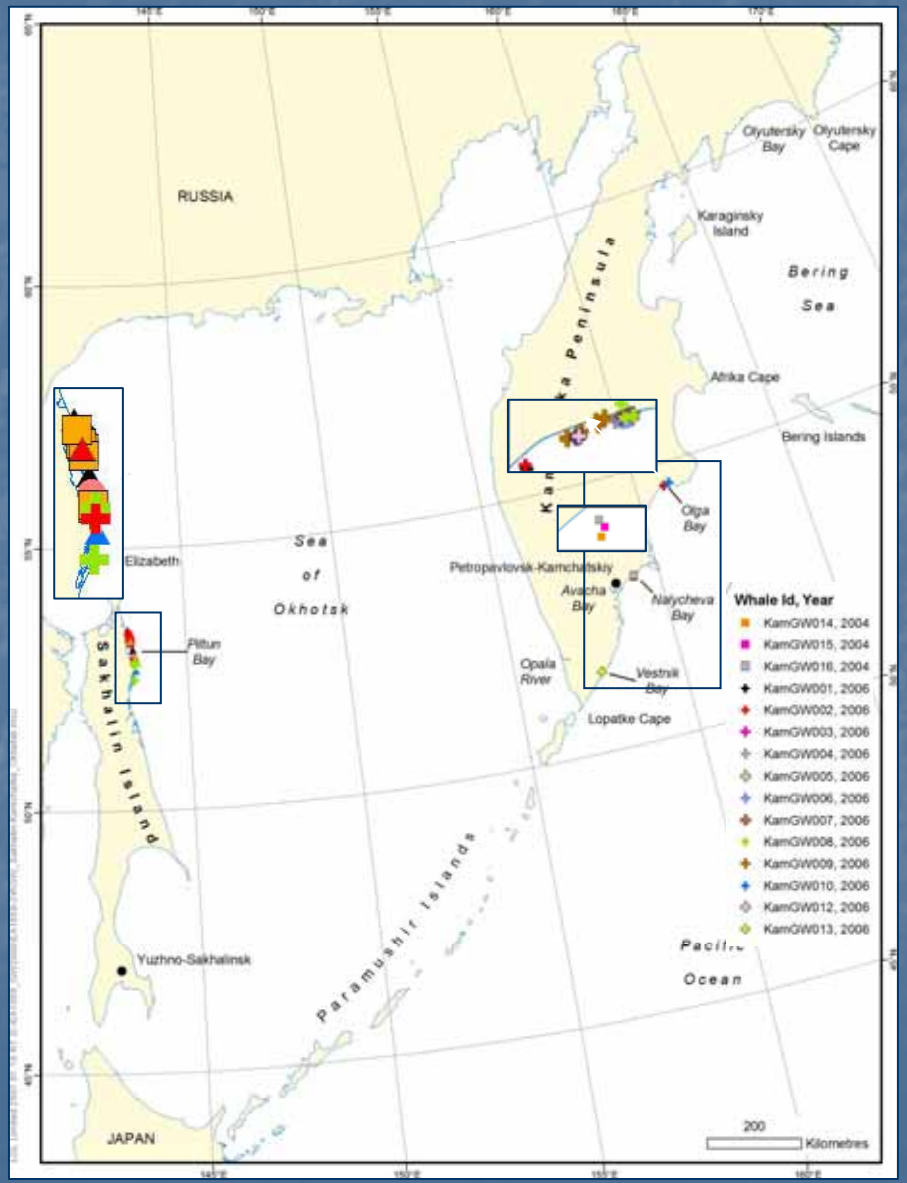
- 3 total days photo-ID effort
  - -1 survey day Vestnik Bay (July)
    1 whale identified
  - -2 survey days Olga Bay (Aug)
    12 whales identified

Results:

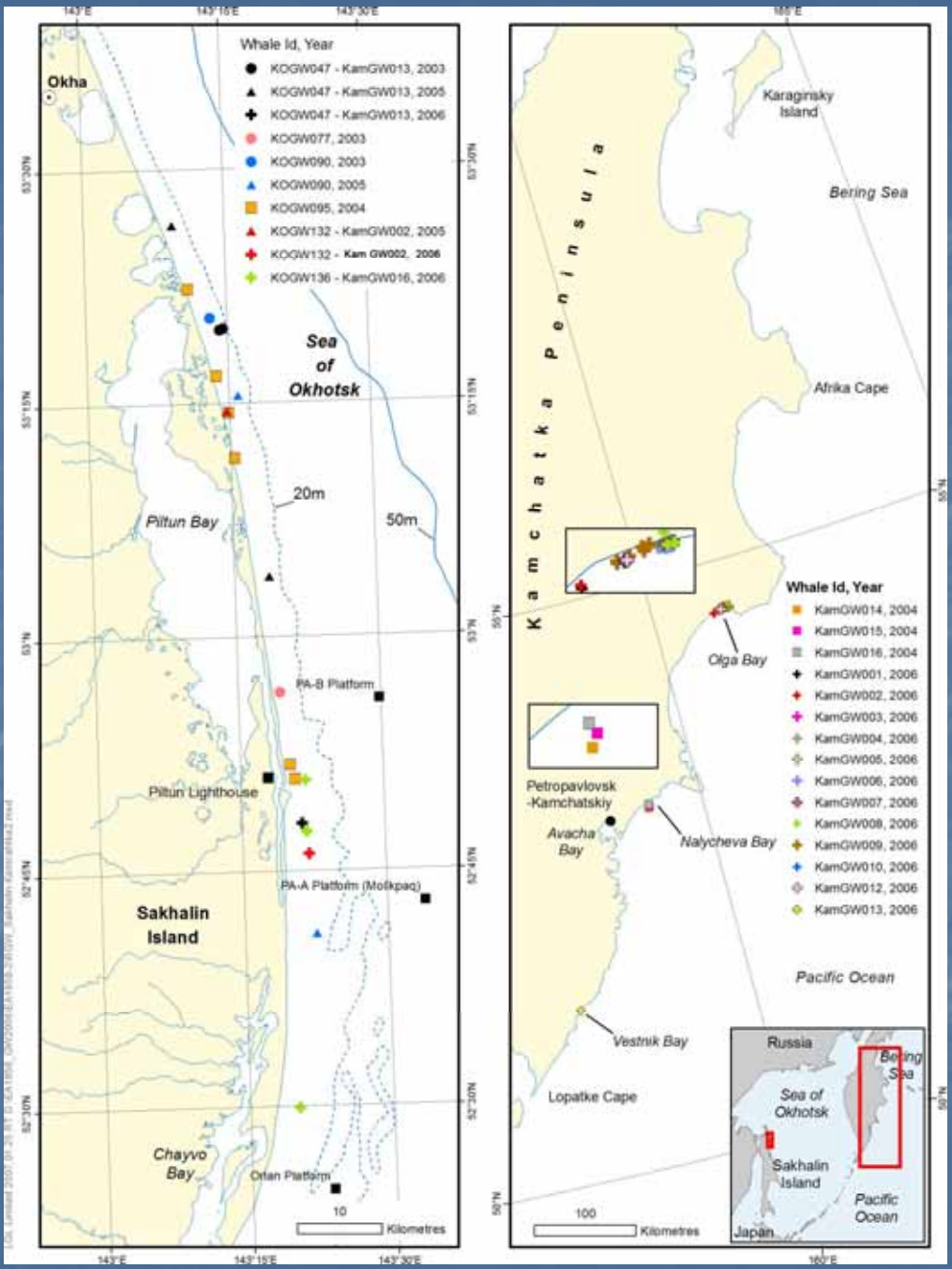
2004 whales were not matched to IBM Sakhalin WGW photo-ID catalogue until 2006 when 1 out of the 3 identified whales matched to IBM catalogue

2006 whales matched 5 out of 13 individuals to the IBM catalogue

2004-2006 Total: 16 whales identified and 6 of which matched to IBM catalogue



Sightings of WESTERN gray whales on the south-east shelf of Kamchatka peninsula



- 6 individuals were matched to both the Kamchatka catalogue and the IBM photo-ID catalogue.
- 2 of the 6 individuals used both Sakhalin and Kamchatka within the same season.
- Two whales of the 6 matched individuals seen in Kamchatka in 2006 were calves seen in Sakhalin in 2003 and 2004 respectively.
- The whale matched to IBM's catalogue first sighted on the Kamchtka shelf in 2004 was seen three times on Sakhalin shelf in 2006.

Classification of the PBC of the Gray Whales PBC* observed in 2004 & 2006

Insufficient PBC

Olga Bay 12 photo-identified whales
2006

8 PBC	class 0	66,66 %
2 PBC	class 1	16,66 %
2 PBC	class 2	16,66 %

Vestnick Bay 1 photo-identified whale
2006

1PBC	class 0	

Khalaktyrsky Beach 3 photo-identified whales
2004

3 had poor PBC in 2004

1 PBC	class 2	33,33 %
2 PBC	class 4	66,66 %

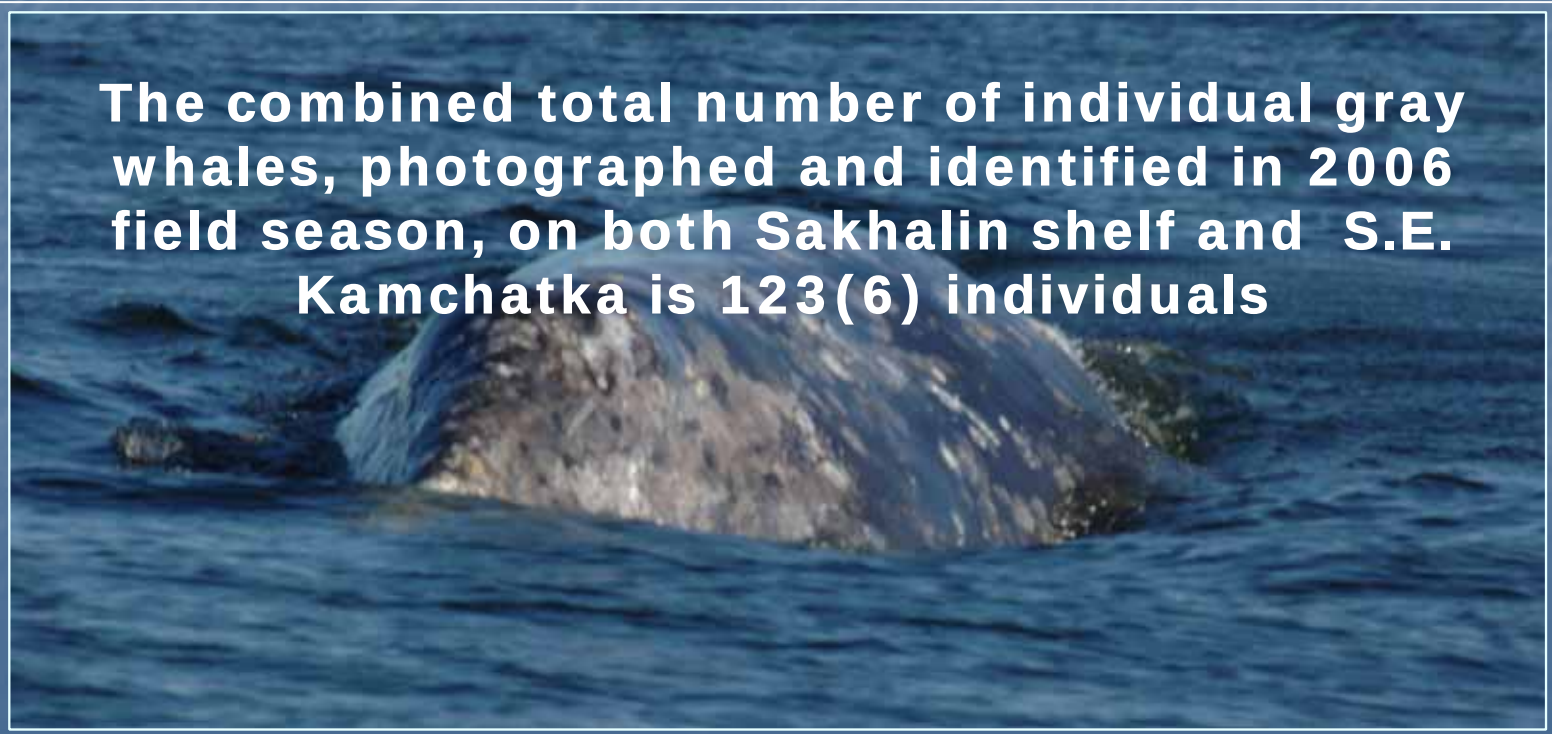
PBC* - Physical body condition
Poor body condition is considered for classes 2-4

Mother-calf Pairs

No mother-calf pairs were observed on south-eastern Kamchatka shelf

Kamchatka-Sakhalin Conclusions

- 16 whales identified in 2 years of research (2004, 2006) on Kamchatka shelf
- 6 out of 16 (37.5%) of Kamchatka whales are known WGWs
- Whales travel between Kam and Sak regions both within and between feeding seasons (e.g. 2 whales seen both on Sak and Kam in 2006)
- Spatial foraging ranges of WGWs can vary dramatically




Thank You

The comparison of the occurrence of the photo-identified gray whales on the Kamchatka peninsula in 2004 and 2006, and on the shelf of Sakhalin from 2002 - 2006

Whale ID on Kamchatka	Sighting date on Kamchatka	Sightings on Sakhalin shelf				Whale ID on Sakhalin
		Yes/no	Year	Quatity	area	
KamGW001	2006_08_21	yes	2003	1	pil	KOGW090
			2005	2	pil	
KamGW002	2006_08_21	yes	2005	1	pil	KOGW132
			2006_09_28	1	pil	
KamGW003	2006_08_22	no				
KamGW004	2006_08_22	no				
KamGW005	2006_08_22	no				
KamGW006	2006_08_22	no				
KamGW007	2006_08_22	no				
KamGW008	2006_08_22	yes	2004	6	pil	KOGW095
KamGW009	2006_08_22	no				
KamGW010	2006_08_22	yes	2003	1	pil	KOGW077
KamGW011	2006_08_22	no				
KamGW012	2006_08_22	no				
KamGW013	2006_07_05	yes	2003	2	off	KOGW047
			2004	1	off	
			2005	4/1	pil/off	
			2006_08_23	1	pil	
KamGW014	2004_07_22	no				
	2004_08_11					
KamGW015	2004_07_22	no				
KamGW016	2004_08_11	yes	2006_09_13	1	Chay	KOGW136
			2006_09_30	1	pil	
			2006_10_01	1	pil	