

MÉXICO PROGRESS REPORT ON CETACEAN RESEARCH, JANUARY TO DECEMBER 2000, WITH STATISTICAL DATA FOR THE CALENDAR YEAR 2000.

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This report summarises information obtained from: Centro Interdisciplinario de Ciencias Marinas (CICIMAR-IPN), Instituto Nacional de la Pesca (INP): CRIP Ensenada, CRIP La Paz and CRIP La Cruz de Huanacastle; School for Field Studies, Center for Coastal Studies (SFS-CCS), Investigación y Conservación de Mamíferos Marinos, A.C. (ICMME); Texas A&M University, Wildlife and Fisheries Sciences Department (WFSC), Universidad Autónoma de Baja California Sur (UABCS), Red de Varamientos de Yucatán, A.C. (REVAY).

1. Species and stocks studied

Common name	Scientific name	Area/stock(s)	Items referred to
Gray whale	<i>Eschrichtius robustus</i>	eastern	2.1.1, 3.1.1, 3.1.3, 4.1, 4.3
Blue whale	<i>Balaenoptera musculus</i>	North Pacific	2.1; 2.1.1; 3.1.1; 3.1.3; 6.2
Sperm whale	<i>Physeter macrocephalus</i>	Baja California waters	2.1, 4.2, 4.3
Bottlenose dolphin	<i>Tursiops truncatus</i>	Gulf of California and Pacific	2.1.1, 3.1.1
Vaquita	<i>Phocoena sinus</i>	Gulf of California	2.1.1; 2.2; 8
Fin whale	<i>Balaenoptera physalus</i>	Gulf of California	2.1.1, 3.1.3, 4.1

2. Sightings data

2.1 Field work

2.1.1 SYSTEMATIC

PNICMM-Ensenada

Habitat use of vaquita. Acoustic surveys of vaquita in the Upper Gulf of California (1999 – 2001). Together with Dr.J. Gordon, D. Gillespie and O. Chapell (UK) we have performed a pilot study to test an automated passive acoustic detector. Five surveys (and two more to come) have been performed totalling more than 3000 km. Together with SWFSC (USA) and UABCS (Mex.) analysis of sediments and nutrients have been concluded. Other oceanographic information is still to be analysed; 2. *Tursiops truncatus* of the Upper Gulf of California. Data of these species from the Upper Gulf have been collected and biopsies are currently being taken.

INP-CRIP La Paz

Gray whale distribution and abundance was investigated, continuing previous studies at the north of the Magdalena Bay complex. Data on potential impact of whalewatching vessels was also collected.

Bottlenose dolphin abundance and distribution studies were continued at lagoons and bays in the Gulf of California and Gulf of México. Photographs of dorsal fins for individual identification are being added to a catalogue.

INP – PNAAPD

As in previous years, observers were placed in commercial tuna fishing vessels at the purse fishery in the Mexican Pacific and at the long line fishery in the Gulf of Mexico. Among their main duties they systematically collect data on sightings and interactions with cetaceans.

UABCS

This year the gray whale project on use patterns of Laguna San Ignacio continued in conjunction with the Kiel Oceanographic Institute from Germany and a new project with similar objectives in Laguna Ojo de Liebre begun. The collaboration with the University of California and Cornell University on the feeding behaviour of fin and blue whales in the Gulf of California also continued. Finally, in collaboration with the Oregon State University they begin a project about the movements of blue and fin whales in the Gulf of California with satellite tags.

ICMME

Bottlenose dolphin identification in the eastern north Pacific was continued (started in 1999) in Todos Santos Bay,

Ensenada, Baja California, and along the coast near San Quintín Bay, Baja California, in collaboration with the Cetacean Behavior Laboratory, San Diego State University, USA. Field work was terminated in June, 2000.

2.1.2 OPPORTUNISTIC, PLATFORMS OF OPPORTUNITY

CICIMAR-IPN

During the winter-spring season of 2000, non systematic surveys to photo-identified blue whales and sperm whales were made in the southwestern Gulf of California. Photoidentification, dart biopsies and sloughed skin sampling of blue whales continued during 2000. Sperm whales were also photo-identified and sloughed skin sampled during 2000.

2.2 Analyses/development of techniques

PNICMM-Ensenada

Currently analysing the acoustic data contained in 171 digital files sizing 5.02 GB. The process includes the filtering of the files to eliminate periods of known acoustic interferences and periods of strong background signals.

The next step consists in the identification of vaquita signals in the files, for which is necessary to develop additional computational algorithms, that will use acoustic parameters measured from signals certainly identified as vaquitas, as indicated for visual encounters or by signals that match with the ones recorded with the first version of the acoustic equipment.

3. Marking data

3.1 Field work

3.1.1 NATURAL MARKING DATA

Species	Feature	Area/stock	Calendar year/season no. photographed	Catalogued (Y/N)	Catalogue total	Contact person/institute
Blue whale	Right and left sides and fluke	Baja California/N Pacific	1988-2000	Y	300	CICIMAR-IPN
Sperm whale	fluke	Gulf of California/N Pacific	1992-1999 2000	Y N	150 ?	CICIMAR-IPN CICIMAR-IPN
Gray whale	Right side	eastern	2001/300whales photographed	y	1400	Urban, UABCS
Fin whale	Dorsal fin	Gulf of California	2001/40 whales photographed	y	400	Urban, UABCS
Bottlenose dolphin	Dorsal fin	Gulf of California and Pacific Coast of Baia California	150	N	?	Pérez-Cortés, INP
Bottlenose dolphin	Dorsal fin	w. N. Pacific (San Quintín, Baja California)	Jan-June 2000 30	Y	124	G. Heckel/ ICMME
Bottlenose dolphin	Dorsal fin	w. N. Pacific (Ensenada, Baja California)	Jan-June 2000 42	Y	88	G. Heckel/ ICMME

3.1.2. ARTIFICIAL MARKING DATA

None

3.1.3 TELEMETRY DATA

Species	Tag type	No. successfully deployed	Maximum time transmitting	contact person/institute
Gray whale	TDR	6	4 hours	Urban, UABCS
Fin whale	VHF/TDR	4	3 days	Urban, UABCS
Fin whale	Sattelite	10	>3 weeks	Urban, UABCS

3.2 Analyses/development of techniques

CICIMAR

Skin from biopsy of blue whales were used for DNA analysis, while contaminant were analyzed from the blubber (see SOMEMMA abstract). Sloughed skin of blue whales is used in DNA analysis. Sperm whale sloughed skin is used also for DNA analysis and stable nitrogen and carbon isotopes analysis.

4. Tissue/biological samples collected

4.1 Biopsy samples and sloughed samples (*)

Species	Area/stock	Calendar year/ season no. Collected	Archived (Y/N)	No. Analysed	Total holdings	Contact person/institute
Gray whale	eastern	n	Y	n		Ollervides
Gray whale	eastern	15	Y	0	195	Urban, UABCS
Fin whale	Gulf of California	44	Y	10	160	Urban, UABCS
Sperm whales	Gulf of California	200	Y	0	210	Urban, UABCS
Fin whale	Gulf of California	2001/44	Y	10	204	Urban, UABCS
Blue whale (*)	Baja California/N Pacific	1996-1999/ 218	Y	60		D. Gendron, CICIMAR-IPN
		2000/ 13	Y	0		
Sperm whale (*)	Gulf of California/N Pacific	1966-1999/ 50	Y	50		D. Gendron, CICIMAR-IPN
		2000/ 32	Y	0		
Cuvier'S beaked whale	N Pacific	1	Y	0	1	Pérez-Cortés, INP

4.2 Samples from directed catches or bycatches

none

4.3 Samples from stranded animals

Species	Area/stock	Calendar year/ season total	Archived (Y/N)	Tissue type(s)*	Contact person/institute
False Killer Whale	Gulf of Mexico	6	Y	Skin, blubber, lungs, liver, stomach, ovaries	REVAY
Blue whale	Baja California/N. Pacific	2000/2	y	Skin, blubber	D.Gendron, CICIMAR-IPN
Sperm whale	Gulf of California/N. Pacific	2000/1	Y	Skin, blubber, stomach content	D.Gendron, CICIMAR-IPN
Bottlenose dolphin	E.N. Pacific	1	Y	Skin, blubber, lung, heart, stomach, pancreas, liver, kidney	G. Heckel/ ICMME
Blue whale	E.N. Pacific	1	Y	Skin, blubber	G. Heckel/ICMME

4.4 Analyses/development of techniques

WFSC

CAT scans and MRI's of one right periotic and two left periotic bones to analyze possible acoustic trauma, none detected.

CICIMAR

HC's and PCB were quantified from blubber of the stranded individuals.

ICMME

Histopathological analyses were carried out with organ samples from one bottlenose dolphin at Universidad Autónoma de Baja California, Mexicali. Blue whale skin sample was analysed to confirm species identification by molecular analysis. Blubber and skin of this same blue whale was donated to Centro de Investigación Científica y Educación Superior de Ensenada, where samples were analysed for chlorinated hydrocarbon concentrations.

5. Pollution studies

CICIMAR

Blubber from 18 dart-skin biopsies of blue whales were analysed for HC'S, and PBC contaminants. Results were presented at the 2001 SOMEMMA meeting (see section 11.2).

6. Statistics for large cetaceans

6.1 direct catches (commercial, aboriginal and scientific permits) for the calendar year 2000

None

6.2 Other non-natural mortality for the calendar year 2000

None reported

7. Statistics for small cetaceans

7.1 For the calendar year 2000

Species	Area/stock	Directed catch		Incidental mortality			Live-capture
		Reported	Est. total	Reported	Est. total	Source*	Reported
Bottle nose dolphins	Gulf of México	0	0	0	-		7*
Bottle nose dolphin	N Pacific	0	0	0	-		8*
Bottle nose dolphin	Gulf of California	0	0	0	-		15*
Vaquita	Gulf of California	0	0	5	-	Gillnet	0
Risso's dolphin	Pacific	0	0	1	-	Long line	0

* With permits issued by SEMARNAP

8. Strandings

Several institutions assist on marine mammal strandings on a volunteer basis, trying to release live animals and collecting morphometric data and tissue samples. For the season included in the present document, the following institutions reported stranded cetaceans:

Institution	contact	species
INP	H. Pérez-Cortés	<i>Eschrichtius robustus</i>
INP	H. Pérez-Cortés	<i>Orcinus orca</i>
INP	H. Pérez-Cortés	<i>Ziphius cavirostris</i>
REVAY	D. Antochiw-Alonzo	<i>Tursiops truncatus</i>
REVAY	D. Antochiw-Alonzo	<i>Globicephala macrorhynchus</i>
REVAY	D. Antochiw-Alonzo	<i>Pseudorca crassidens</i>
UABCS	J. Urbán	<i>Eschrichtius robustus</i>
UABCS	J. Urbán	<i>Kogia sima</i>
UABCS	J. Urbán	<i>Delphinus delphis</i>
WFSC	F. Ollervides	<i>Eschrichtius robustus</i>
ICMME	G. Heckel	<i>Delphinus delphis</i>
ICMME	G. Heckel	<i>Tursiops truncatus</i>
ICMME	G. Heckel	<i>Steno bredanensis</i>
ICMME	G. Heckel	<i>Balaenoptera musculus</i>
ICMME	G. Heckel	<i>Eschrichtius robustus</i>
INP	S. Hernández	<i>Megaptera novaeangliae</i>
INP	S. Hernández	<i>Kogia sima</i>
INP	S. Hernández	<i>Stenella longirostris</i>

9. Other studies and analyses

WFSC

Acoustics and behavioral responses of gray whales toward ship traffic with specific interest in whale-watching methods and techniques of approach.

10. Literature cited

Include all references cited in the text here.

11. Publications

11.1 Published or 'In Press' papers only

- Calambokidis, J., G.H. Steiger, K. Rasmussen, J. Urbán R., K.C. Balcomb, P. Ladrón de Guevara P., M. Salinas Z., J.K. Jacobsen, C.S. Baker, L.M. Herman, S. Cerchio y J. Darling. 2000. Migratory destinations of humpback whales that feed off California, Oregon and Washington. *Marine Ecology Progress Series* 192:295-304
- Flores-Ramírez, S., J. Urbán R. y R. D. Miller. 2000. Major histocompatibility complex class I loci from the gray whale (*Eschrichtius robustus*). *The Journal of Heredity* 91(4) : 279-282
- Gardner, S. C., and S. Chávez-Rosales. 2000. Changes in the relative abundance and distribution of gray whales (*Eschrichtius robustus*) in Magdalena Bay, during an El Niño event. *Marine Mammal Science*. 16(4):728-738.
- Heckel, G., K. E. Murphy, and G. A. Compeán Jimenez. 2000. Evasive behavior of spotted and spinner dolphins (*Stenella attenuata* and *S. longirostris*) during fishing for yellowfin tuna (*Thunnus albacares*) in the eastern Pacific Ocean. *Fish. Bull.* 98:692-703.
- Gendron, D. 2000. Family Physeteridae. pp. 635-637. In: S.T. Alvarez and J.L. Patton (eds) *Mamíferos del Noroeste de Mexico II*. CIB Nor, S.C. La Paz, México 875 pp.
- Gendron, D. 2000. Family Kogiidae. pp. 639-341. In: S.T. Alvarez and J.L. Patton (eds) *Mamíferos del Noroeste de Mexico II*. CIB Nor, S.C. La Paz, México 875 pp.
- Gendron, D. 2000. Family Balaenidae. pp.685-687. In: S.T. Alvarez and J.L. Patton (eds) *Mamíferos del Noroeste de Mexico. II*. CIB Nor, S.C. La Paz, México 875 pp.
- Gendron, D. & S.L. Mesnick. *in press*. Sloughed skin: a method for the systematic collection of tissue samples from Baja California blue whales. *The Journal of Cetacean Research and Management*.
- Gendron, D., S. Aguiñiga & J.D. Carriquiry. *in press*. $\delta^{15}\text{N}$ and $\delta^{13}\text{C}$ in skin biopsy: Applicability for examining the relative trophic level in three rorqual species. *The Journal of Cetacean Research and Management*.
- Guerrero-Ruiz, M. y J. Urbán R. 2000. First report of remoras on two killer whales in the Gulf of California, Mexico. *Aquatic Mammals* 26(2): 148-150.
- Le Bœuf, B.J., H. Pérez-Cortés M., J. Urbán R., B.R. Mate y F. Ollervides U. 2000. High gray whale mortality and low recruitment in 1999: potential causes and implications. *The Journal of Cetacean Research and Management* 2(2): 85-99.
- Moore, S.E., Urban R, J., Perryman, W. L., Gulland, F., Pérez-Cortés M., H., Wade, P.R., Rojas Bracho, L. and Rowles, T. *in press*. Are Gray Whales Hitting 'K' Hard? *Marine Mammal Science*.
- Ortega-Ortiz, J. G., B. Villa-Ramírez, and J. R. Gersenowies. 2000. Polydactyly and other features of the manus of the vaquita. *Marine Mammal Science*. 16(2):277-286.
- Pérez-Cortés M., H., Villa-R., B., Delgado, A. and Patiño, J.L.. 2000. Familia Delphinidae. pp. 597-626 In: S.T. Alvarez and J.L. Patton (eds) *Mamíferos del Noroeste de Mexico II*. CIB Nor, S.C. La Paz, México 875 pp.
- Pérez-Cortés M., H. 2000. Ballena gris (*Eschrichtius robustus*) pp.919-930. In: INP (eds.) 2000. *Sustentabilidad y pesca responsable en México. Evaluación y manejo 1999-2000*. Instituto Nacional de la Pesca, México. Published in CD.
- Rodríguez Vázquez, M. E. 2000. Potencial turístico e impacto de la observación de ballena jorobada (*Megaptera novaeangliae*) en Bahía de Banderas, México. Thesis Licenciatura. U de G, Guadalajara. 122 pp.
- Rojas-Bracho, L. and Jaramillo, A.. 2000. Familia Phocoenidae. pp. 627-633. In: S.T. Alvarez and J.L. Patton (eds) *Mamíferos del Noroeste de Mexico II*. CIB Nor, S.C. La Paz, México 875 pp.
- Rojas-Bracho, L. and Jaramillo, A. 2000. Vaquita marina (*Phocoena sinus*) pp.897-918. In: INP (eds.) 2000. *Sustentabilidad y pesca responsable en México. Evaluación y manejo 1999-2000*. Instituto Nacional de la Pesca, México. Published in CD.
- Rojas-Bracho, L. and A. Jaramillo. *in press*. Vaquita. In: W.F. Perrin, B. Würsig and H. Thewissen (eds). *Encyclopedia of Marine Mammals*. Academic Press
- Ruelas, J. R., F. Paez-Osuna, and H. Pérez-Cortés M. 2000. Distribution of Mercury in Muscle, Liver and Kidney of the Spinner Dolphin (*Stenella longirostris*) Stranded in the Southern Gulf of California. *Marine Pollution Bulletin*. 40(11):1063-1066.
- Sánchez Pacheco, J. A., A. Vázquez-Hanckin, and R. De Silva-dávila. 2000. Gray whales' mid-spring feeding at Bahía de Los Angeles, Gulf of California, México. *Marine Mammal Science*. 17(1):186-191.

- Urban R., J. 2000. Familia Balaenopteridae. pp. 661-683. In: S.T. Alvarez and J.L. Patton (eds) *Mamíferos del Noroeste de Mexico II*. CIB Nor, S.C. La Paz, México 875 pp.
- Urban R., J. 2000. Familia Eschrichtidae. pp. 655-659 In: S.T. Alvarez and J.L. Patton (eds) *Mamíferos del Noroeste de Mexico II*. CIB Nor, S.C. La Paz, México 875 pp.
- Urban R., J. and Pérez-Cortés M., H. 2000. Familia Ziphiidae. pp. 643-653 In: S.T. Alvarez and J.L. Patton (eds) *Mamíferos del Noroeste de Mexico II*. CIB Nor, S.C. La Paz, México 875 pp.
- Urbán R., J., A. Jaramillo L., A. Aguayo L., P. Ladrón de Guevara P., M. Salinas Z., C. Alvarez F., L. Medrano G., J.K. Jacobsen, K.C. Balcomb III, D.E. Claridge, J. Calambokidis, G.H. Steiger, J. Straley, O. vonZiegesar, J.M. Wite, S. Miszroch, M.E. Dahlheim, J.D. Darling y C.S. Baker. 2000. Migratory destinations of humpback whales wintering in the Mexican Pacific. *The Journal of Cetacean Research and Management* 2(2): 101-110
- Urbán R., J. y L. Rojas B. 2000. 1999. Los programas de conservación de mamíferos marinos p.541-573. In Ma del C. RodríguezH. y C. Hernández F. (eds). En: Océanos ¿Fuente inagotable de recursos? . Programa Universitario del Medio Ambiente, UNAM-SEMARNAP. 589 pp.

11.2 Unpublished literature

Please include information as to where the documents may be obtained.

- Enriquez, L.E., Heckel, G., Hyde, J., Schramm, Y., Mesnick, S.L. and Dizon, A.E. 2001. Species identification of a stranded orqual with molecular techniques. Paper presented at the Mexican Marine Mastozoology Conference, Ensenada, México, May 2001.
- Gendron, D., L. Enriquez-Paredes & S. Mesnik. Preliminary reproductive information on blue whales observed off the Baja California peninsula. XXVI Reunión Internacional sobre el Estudio de los Mamíferos Marinos. La Paz. B.C.S. Mexico.
- Heckel, G. 2001. The influence of whalewatching on the behavior of gray whales (*Eschrichtius robustus*) in Todos Santos Bay and surrounding waters, Baja California, México: Management plan proposal. Ph.D. dissertation. Universidad Autónoma de Baja California, Ensenada, México. 102 pp. (electronic copy in English or Spanish may be obtained from gheckel@telnor.net)
- Ruiz-Casto, R.I. , D. Gendron, S. Aguiñiga, S. Mesnik & J.D. Carriquiry. Trophic relationship between sperm whales (*Physeter macrocephalus*) and squid (*Dosidicus gigas*) in the Gulf of California using $\delta^{13}\text{C}$ and $\delta^{15}\text{N}$. XXVI Reunión Internacional sobre el Estudio de los Mamíferos Marinos. La Paz. B.C.S. Mexico.
- Enriquez-Paredes, L., D. Gendron & J. De la Rosa-Vélez. Reproducibility for amplification patterns of molecular markers from blue whales (*Balaenoptera musculus*) skin obtained by semi-invasive and non-invasive sampling. XXVI Reunión Internacional sobre el Estudio de los Mamíferos Marinos. La Paz. B.C.S. Mexico.
- Jaramillo, A. and L. Rojas-Bracho. Recent Advances in Population Study of Vaquita (*Phocoena sinus*) Based on the Application of Passive Acoustic Techniques. Presented at the XXV of the Sociedad Mexicana de Mastozoología Marina (SOMEMMA). May 2000.
- Rojas-Bracho, L., A. Díaz de León, O. Ramírez, A. Jaramillo y H. Pérez-Cortés. First Steps For A Recovery Plan For The Vaquita: The Reports of The International Committee For Recovery Of Vaquita. Presented at the XII Meeting of the European Cetacean Society. Cork Ireland, April 2000.
- Valdez-Márquez, M., D. Gendron, M.L. Lares & V. Camacho-Ibar. Chlorinated hydrocarbons in blue whale *Balaenoptera musculus* and euphausiids from the mexican pacific. XXVI Reunión Internacional sobre el Estudio de los Mamíferos Marinos. La Paz. B.C.S. Mexico.
- Valdez-Márquez, M.L. Lares & D. Gendron. Chlorinated hydrocarbons in blubber and skin of three cetaceans stranded in the Mexican pacific. XXVI Reunión Internacional sobre el Estudio de los Mamíferos Marinos. La Paz. B.C.S. Mexico.