

MÉXICO PROGRESS REPORT ON CETACEAN RESEARCH, JANUARY TO DECEMBER 2000, WITH STATISTICAL DATA for the CALENDAR YEAR 2000 AND SPECIFIC ACTIONS TOWARDS MARINE MAMMAL CONSERVATION

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This report summarises information obtained from: INVESTIGACION Y CONSERVACION DE MAMIFEROS MARINOS DE ENSENADA (ICMME); CENTRO INTERDISCIPLINARIO DE CIENCIAS MARINAS; INSTITUTO NACIONAL DE ECOLOGIA, La Paz and Ensenada and SEMARNAT (Ministry of the Environment, Mexico D.F.) and UNIVERSIDAD AUTÓNOMA DE BAJA CALIFORNIA SUR (UABCS).

1. Species and stocks studied

Common name	Scientific name	Area/stock(s)	Items referred to
Blue whale	<i>Balaenoptera musculus</i>	North Pacific (Baja California)	4.4
Fin whale	<i>Balaenoptera physalus</i>	Gulf of California	3.1
Common dolphin	<i>Delphinus delphis</i>	North Pacific	8
Bottlenose dolphin	<i>Tursiops truncatus</i>	North Pacific, Gulf of California and Pacific	2.1, 3.1, 8
Gray whale	<i>Eschrichtius robustus</i>	Eastern	2.1, 3.1, 8, 11
Sperm whale	<i>Physeter macrocephalus</i>	Pacific (Gulf of California)	2.1, 3.1
Vaquita	<i>Phocoena sinus</i>	Pacific (Gulf of California)	2.1.1

2. Sightings data

2.1 Field work

2.1.1 SYSTEMATIC

ICMME

During the winter-spring season of 2001, non systematic surveys to photo-identified blue whales and sperm whales were made in the southwestern Gulf of California. Photo-identification, dart biopsies and sloughed skin sampling of blue whales continued during 2001. Sperm whales were also photo-identified and sloughed skin sampled during 2001.

PNICMM-INE, Ensenada

1. Habitat use of vaquita. Acoustic surveys of vaquita in the Upper Gulf of California (1999 – 2002). Together with Dr.J. Gordon, D. Gillespie and O. Chapell (UK) we have continued to use the automated passive acoustic detector second generation. In the last eight months we have covered 285.34 hrs of survey in fixed stations and 443.44 km and 32.20 hrs in transects. Since the survey started we have covered a total of 356.05 hrs in fixed stations and 207.20 hrs and 2395 km. Together with SWFSC (USA) and UABCS (Mex.) we have continued the analysis of the oceanographic data from the 1997 vaquita cruise. More oceanographic data are being collected during the acoustic surveys. These info will be used to describe vaquita habitat and better understand habitat use. 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. Biopsies from gray whales were taken for a joint work with the UABCS and CICESE to study residency of gray whales in the breeding lagoons.

PNICMM-INE,-La Paz

Gray whale distribution and abundance was investigated, continuing previous studies at the north of the Magdalena Bay complex. Although the high mortalities recorded in previous years did not continued during 2001, the number of calves observed within this breeding lagoon was low.

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.

CICIMAR, IPN

During the winter-spring season of 2001, non systematic surveys to photo-identified blue whales and sperm whales were made in the southwestern Gulf of California. Photo-identification, dart biopsies and sloughed skin sampling of blue whales continued during 2001. Sperm whales were also photo-identified and sloughed skin sampled during 2001.

UABCS

This year the gray whale project on use patterns of Laguna Ojo de Liebre continued, as well as the fin whale project on their residency patterns in the Gulf of California.

2.2 Analyses/development of techniques

PNICMM-INE, Ensenada

An alternative way to measure acoustic parameters of vaquita click trains is in process. This will help in the identification of positive vaquita acoustic encounters and in the determination of possible differences both, spatially and seasonally, in the clicking patterns of echolocation signals that vaquita uses.

3. Marking data

3.1 Field work

3.1.1 NATURAL MARKING DATA

It would be helpful to provide this in the form of a table, e.g.

Species	Feature	Area/stock	Calendar year/season no. photographed	Catalogued (Y/N)	Catalogue total	Contact person/institute
Blue whale	Right + left side flukes	Npacific Baja California	100	no	(300+)	D. Gendron CICIMAR-IPN
Fin whale	Right + left side	Gulf of California	45	yes	(350+)	J. Urbán UABCS
Gray whale	Right side	Laguna Ojo de Liebre	450	no	1600+	J. Urbán UABCS
Sperm whale	flukes	Npacific Gulf of California	20	No		
Bottlenose dolphin	Dorsal fin	Gulf of California and Pacific Coast of Baja California	150	N	?	Pérez-Cortés, INE

3.1.2. ARTIFICIAL MARKING DATA

none

3.1.3 TELEMETRY DATA

This would include both satellite and radio-tags. A table might again be an appropriate way to summarise the data e.g.

Species	Tag type	No. successfully deployed	Maximum time transmitting	contact person/institute
Fin whale	satellite	11	158 days	Bruce Mate OSU/ J. Urbán UABCS
Blue whale	satellite	4		Bruce Mate OSU/ J. Urbán UABCS
Blue whale	cittercam	2	12	John Calambokidis Cascadian Research Collective

3.2 Analyses/development of techniques

4. Tissue/biological samples collected

4.1 Biopsy samples

Species	Area/stock	Calendar year/season no. collected	Archived (Y/N)	No. analysed	Total holdings	Contact person/institute
Fin whale	Gulf of California	30	y	no	200+	J. Urbán
Blue whale	Npacific Baja California	6	Y	no	6	D.Gendron, CICIMAR-IPN

4.2 Samples from directed catches or bycatches

Vaquita	Upper Gulf of California	2	N	no	45	L. Rojas-Bracho
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4.3 Samples from stranded animals

Species	Area/stock	Calendar year/ season total	Archived (Y/N)	Tissue type(s)*	Contact person/institute
<i>Mesoplodon</i>	Pacific	1	N	muscle	H. Pérez-Cortés

4.4 Analyses/development of techniques

ICMME

On October 18, 2000, a mysticete post mortem stranding was recorded north of El Sauzal port (31°53.879N', 116°42.921W), near Ensenada, Baja California, Mexico. The whale was a male with a total length of 17.90 m. Due to advanced decomposition, the animal could not be identified by external features. A 5cm² skin sample was collected for identification with molecular techniques. From the extracted genomic DNA, a fragment of approximately 560 base pairs that comprises the hypervariable region I of the mitochondrial DNA control region was amplified by PCR. With an automatic sequencer the nucleotide sequence was recorded for both complimentary chains of the amplified fragment. The edited (revised) sequence was accessed into DNA BLAST and contrasted with the data bases. Query results indicated that the sequence undoubtedly matched the species *Balaenoptera musculus*. The mitochondrial haplotype of the stranded individual showed a high affinity to other North Pacific blue whales.

5. Pollution studies

PCB and pesticides were analyzed from the blubber of 18 blue whales biosied and two stranded animals (see Master thesis).

6. Statistics for large cetaceans

6.1 direct catches

none recorded

6.2 Other non-natural mortality for the calendar year 2001.

none recorded

6.3 Earlier years' statistics

7. Statistics for small cetaceans

7.1 For the calendar year 2001

Species	Area/stock	Directed catch		Incidental mortality			Live-capture
		Reported	Est. total	Reported	Est. total	Source*	Reported
Bottle nose dolphin	Gulf of California	0	0	1	-		15*
Vaquita	Gulf of California	0	0	2	-	Gillnet	0

8. Strandings

Species stranded in Bahia Todos Santos, Baja California, Mexico (North Pacific). Contact for more information: Investigación y Conservación de Mamíferos Marinos de Ensenada, A.C., Gisela Heckel, gheckel@telnor.net

Institution	contact	species
ICMME	Gisela Heckel	<i>Tursiops truncatus</i>
ICMME	Gisela Heckel	<i>Delphinus delphis</i>
ICMME	Gisela Heckel	unidentified delphinid
INE	H. Pérez-Cortés	<i>Tursiops truncatus</i>
INE	H. Pérez-Cortés	<i>Mesoplodon peruvianus</i>
INE	H. Pérez-Cortés	<i>Eschrichtius robustus</i>

9. Other studies, analyses and actions for conservation

9.1 Marine mammal protection:

Publication of the NOM-ECOL-059-2001. This piece of legislation lists all wildlife at risk. During its last modification we included all cetacean species under the category of "Special Protection". (Published in February 2002).

Second publication of the NOM-EM-136-2002 which is an emergency piece of legislation in which specific regulations for marine mammals in captivity are specified. (valid for 6 months). This is the first piece of legislation on its kind in Mexico.

Organization of working groups for the elaboration of the non-emergency Marine Mammal in Captivity Act which will be substituting the previous one and will have a validity of 5 to 6 years before revision. It includes regulations on capture methods, transport, handling and captivity of cetaceans, pinnipeds, otters, manatees and polar bears. It explicitly prohibits the so called Dolphin Therapy.

Modification of the Wildlife Law, Article 60 Bis, published in January 2002, in which "no marine mammal species in Mexican waters may be captured for commercial or subsistence uses, with the exceptional capture for non-invasive scientific research by an accredited scientific institution." For a capture permit to be issued, the person will submit a complete scientific research protocol.

Modification of the Ley de Derechos in which a cuota of \$84,000.00 pesos (\$8400.00 USD aprox.) as payment to have the right to capture a marine mammal only under the conditions of the Wildlife Law.

Whale Refuge or Sanctuary in the exclusive economic zone of Mexico, under revision.

9.2 Vaquita :

Special Inspection and Enforcement Operative to ban shrimp trawlers from fishing within the Upper Gulf Biosphere Reserve. This Operative was implemented by the Environment Ministry (SEMARNAT) and the Navy (SEMAR) in order to enforce Article 81, fraction f of the Wildlife Law pertaining to Protected Areas. This article states that "within marine protected areas, the use of non-selective fishing gear which exceeds the proportion of 1:1 target to incidental catch species, is prohibited. " The Enforcement Operative was implemented in October 2001 and is still in place.

Modification of the Management Plan of the Biosphere Reserve to have congruence between the several actions headed to restrict the use of gillnets which cause death of the vaquita.

One of the actions mentioned above is to establish the Agreement for the Vaquita Refuge for the area of most concentration of vaquitas within and out of the Biosphere Reserve. It also includes phases of restriction on the use of gillnets which will coincide with the modification of the Management Plan and the modification of the NOM-PESC-012-1994.

Modification of the NOM-PESC-012-1994. This obsolete piece of legislation will be modified to contain specific restrictions on the use of several types of gillnets within the Reserve and including the range of the vaquita.

Meetings with the commercial fishermen of Puerto Peñasco, Sonora, where most of the trawling Operative has been in effect.

Meetings between the Environment Minister and the Minister of Agriculture to propose a joint strategy for sustainable fishing practices within marine protected areas and a mechanism to establish fishing permit controls, specially within the Biosphere Reserve in the Upper Gulf of California.

Establishment of the Subcommittee for the Recovery of Priority Species-Vaquita, by the Ministry of the Environment (SEMARNAT). This Subcommittee includes all participants in the Vaquita Conservation Strategy (CIRVA).

10. Literature cited

Enriquez, L., G. Heckel, J. Hyde, Y. Schramm, S.L. Mesnick and A. Dizon. 2001. Species identification of a stranded orca with molecular techniques. XXVI International Meeting for the Study of Marine Mammals. Ensenada, Baja California, Mexico, May 2001. (Abstract: contact gheckel@telnor.net).

11. Publications

11.1 Published or 'In Press' papers only

-Bérubé, M., Urbán R., J., Dizon, A., Brownell, R.L., y Palsbøll P.J. In press. Genetic identification of a small and highly isolated population of fin whales (*Balaenoptera physalus*) in the Sea of Cortez, Mexico. **Conservation Genetics**

- Jaquet, N. and Gendron, D. (In press). Distribution and relative abundance of sperm whales in relation to key environmental features, squid landings and the distribution of other cetacean species in the Gulf of California, Mexico. **Marine Biology**.

- Rojas-Bracho, L. and A. Jaramillo. 2002. Vaquita. In: W.F. Perrin, B. Würsig and H. Thewissen (eds). *Encyclopedia of Marine Mammals*. Academic Press, pp 1277-1280

-Moore, S.E., J. Urbán R., W.L. Perryman, F. Gulland, H. Perez-Cortes M. P.R. Wade, L. Rojas-Bracho, and T. Rowles. 2001. Are gray whales hitting 'K' hard? **Marine Mammal Science** 17(4): 954-958

-Calambokidis, J., G.H. Steiger, J.M. Straley, L.M. Herman, S. Cerchio, D.R. Salden, J. Urban R., J.K. Jacobsen, O. von Ziegesar, K.C. Balcomb, C.M. Gabriele, M.E. Dahlheim, S. Uchida, G. Ellis, Y. Miyamura, P. Ladron de Guevara P., M. Yamaguchi, F. Sato, S.A. Mizroch, L. Schlender, K. Rasmussen, J. Barlow and T.J. Quinn II. 2001. Movements and population structure of humpback whales in the North Pacific. **Marine Mammal Science** 17(4):769-794

--Croll, D.A., A. Acevedo, B.R. Tershy, y J. Urbán R. 2001. The diving behavior of blue and fin whales: is dive duration shorter than expected based on oxygen stores? **Comparative Biochemistry and Physiology - Part A: Molecular & Integrative Physiology**, 129(4): 797-809

-Medrano-González, Luis, C. Scott Baker, M. Rosalba Robles-Saavedra, Justine Murrell, María J. Vázquez-Cuevas, Bradley C. Congdon, Janice M. Straley, John Calambokidis, Jorge Urbán R., Lilián Flórez-González, Carlos Olavarria-Barrera, Anelio Aguayo-Lobo, Janet Nolasco-Soto, Ricardo A. Juárez-Salas and Karla Villavicencio-Llamas. 2001. Trans-oceanic population genetic structure of humpback whales in the North and South Pacific. **Memoirs of the Queensland Museum** 47(2): 465-479

11.2 Unpublished literature

Valdez-Marquez, M. 2001. Determinación de hidrocarburos clorados en ballena azul *Balaenoptera musculus* y eufausidos del Pacífico Mexicano. Master Thesis, CICESE, Ensenada, México. 83p.

Please include information as to where the documents may be obtained.: Library. CICESE. Km. 103 Carretera Ensenada-Tijuana, Ensenada, BC 22860, México. Web page: www.cicese.mx