NJG/JAC/28070 7 June 2001

CIRCULAR COMMUNICATON TO MEMBERS OF THE
SCIENTIFIC COMMITTEE
IWC.SC.68

Advance circulation of titles, abstracts and documents for the Scientific Committee meeting

Please find attached a list of documents (and available abstracts) for the 53rd Annual Meeting as of 6 June 2001.

Also included with this Circular Communication are copies of the following documents:

SC/53/AWMP
1. PUNT, A.E. A revised `Maximum-likelihood-like' Strike Limit Algorithm for the Bering-Chukchi-Beaufort Seas stock of bowhead whales.
2. PUNT, A.E. and BREIWICK, J.M. A framework for evaluating Strike Limit Algorithms for fishery Type 3.

SC/53/E
1. KRAHN, M.M., YLITALO, G.M. and STEIN, J.E. Contaminants in cetaceans: how to avoid errors when comparing datasets.

SC/53/RMP
1. CUI, G., PUNT, A.E., PASTENE, L.A. and GOTO, M. A Bayesian approach to addressing stock structure questions using mtDNA data, with an illustrative application to the North Pacific minke whales.

SC/53/IA
1. CLAPHAM, C., BAKER, C.S., BROWN, M., DONOGHUE, M., GARRIGUE, C., GILL, P., GREAVES, J., HAUSER, N., PECKHAM, H., OLAVARROA, C. and POOLE, M. Assessment of humpback whales from wintering grounds of Areas V and VI: Objectives, progress to date and future requirements.

SC/53/SD
2. PERRIN, W.F. Draft review of the utility of non-genetic data for differentiating stocks of whales.

SC/53/For Information
7. BRANCH, T.A. and BUTTERWORTH, D.S. Southern Hemisphere minke whales: standardised abundance estimates from the 1978/79 to 1997/98 IDCR-SOWER surveys. Paper submitted to Journal of Cetacean Research and Management.
9. BRANCH, T.A. and BUTTERWORTH, D.S. Estimates of abundance for nine frequently sighted cetacean species based on the 1978/79 to 1997/98 IWC/IDCR-SOWER sighting surveys.

IWC/53/7
GOVERNMENT OF BRAZIL. Proposal to establish a South Atlantic whale sanctuary.

The documents are being circulated as .pdf files, and can be opened using Adobe Reader (4.0). If you do not currently have this program, it can be downloaded quite easily off the internet from (http://www.adobe.com/prodindex/acrobat).

Document SC/53/O 1 – The 2001/2002 Research Plan for the Japanese Whale Research Program under Special Permit in the Antarctic (JARPA) from the Government of Japan was circulated to you on 9 May 2001 (IWC.ALL.43).

Please bring all documents circulated in advance with you to the meeting.

I would like to remind you that the Secretariat will reproduce documents for authors provided that they are received in the Secretariat **before Wednesday 20 June 2001**. Papers can be submitted by either email or as good quality single-sided, single-spaced top copies. Any documents submitted after that date must be provided in 160 copies for distribution by the Secretariat, otherwise there will be serious delays in arranging for the production of necessary copies. These documents should normally be supplied on A4 paper. A document number must be obtained from the Secretariat (hsharp@iwcoffice.org) for such papers.

Last, but not least, I also attach the draft agenda for the 3-4 July meeting to review Southern Hemisphere minke whale abundance estimates, as requested by Debbie Palka, Chair of the Southern Hemisphere Survey Data Review Steering Group. Comments on this draft agenda should be sent to Debbie directly at Debra.Palka@noaa.gov.

I look forward to seeing you all in London.

Dr. Nicky Grandy
Secretary to the Commission

List of documents (and available abstracts) for the 53rd Annual Meeting as of 6 June 2001

(Please note: those titles marked with an asterisk have been pre-circulated.)

SC/53/AWMP

SC/53/AWMP1. PUNT, A.E. A revised `Maximum-likelihood-like' Strike Limit Algorithm for the Bering-Chukchi-Beaufort Seas stock of bowhead whales. *

The full specifications for the 'maximum-likelihood-like' strike limit algorithm (SLA) are provided. These include specifications related to the population dynamics model, the likelihood function, the prior for MSYR, and the process for computing 'raw' and final strike limits. The 'maximum-likelihood-like' SLA conforms well to the original objectives for its development because it is generic, sets lower strike limits when uncertainty is greater, and is consistent with the spirit of paragraph 13(a) of the IWC schedule. However, this SLA is not very similar to the Catch Limit Algorithm of Revised Management Procedure unlike an original aim when developing the SLA on which the current SLA is based.

SC/53/AWMP2. PUNT, A.E. AND BREIWICK, J.M. A framework for evaluating *Strike Limit Algorithms* for fishery Type 3.*

A generic framework within which operating models for type 3 fisheries can be developed is outlined. This framework is based on an individual-based operating model that includes temporally correlated environmental variation in births and survival as well as the possibility of occasional catastrophic reductions in survival. Methods are developed to determine the value of the resilience parameter from that for MSYR to enable simulation trials based on this framework to be parameterized in terms of MSYR. Three potential candidate Strike Limit Algorithms are evaluated using 14 'generic' simulation trials that capture a range of factors pertinent to type 3 fishery situations. The 'Maximum-likelihood-like' SLA proposed for use in the management of the Bering-Chukchi-Beaufort Seas stock of bowhead whales performs adequately for most of these 14 trials, but not all. In contrast, a variant of the 'PBR approach' is shown to perform adequately in terms of achieving conservation objectives for all of the trials. The information needed to specify trials for actual type 3 fishery situations is outlined.

SC/53/AWMP3. GIVENS, G. A Strike Limit Algorithm for management of aboriginal whaling for the Bering-Chukchi-Beaufort Seas stock of bowhead whales.

SC/53/AWMP4. GIVENS, G. A merging of two Strike Limit Algorithms for management of aboriginal whaling for the Bering-Chukchi-Beaufort Seas stock of bowhead whales.

SC/53/BRG

SC/53/BRG1. HEIDE-JORGENSEN, M.P., LAIDRE, K., WIIGS, O., JENSEN, M.V., HOBBS, R. AND DUECK, L. From wintering to summering ground in two weeks tracks of bowhead whales, *Balaena mysticetus*, in Baffin Bay.

SC/53/BRG2. GILLESPIE, D. AND LEAPER, R. Report of the workshop on right whale acoustics: practical applications in conservation.

SC/53/BRG3. RUGH, D.J. Gray whale field report: shore counts in 2000/2001.

SC/53/BRG4. SHELDEN, K.E.W. AND RUGH, D.J. Gray whale calf sightings in California suring southbound migrations, 1995-2001.

SC/53/BRG5. CALAMBOKIDIS, J., DARLING, J.D., DEECKE, V., GEARIN, P., GOSHO, M., MEGILL, W., TOMBACH, C.M., GOLEY, D., TOROPOVA, C. AND GISBORNE, B. Abudance, range and movements of a feeding aggregation of gray whales from California to southeast Alaska.

SC/53/E

SC/53/E1. KRAHN, M.M., YLITALO, G.M. AND STEIN, J.E. Contaminants in cetaceans: how to avoid errors when comparing datasets. *

This paper provides the information necessary to avoid errors commonly made in comparing and interpreting datasets when critical information is missing. Before making comparisons and interpretations using various datasets (e.g., those from different laboratories), it is essential to have particular information about the animals sampled (e.g., age, sex, reproductive status), sampling procedures (necropsy or biopsy), analytical methods for lipids and contaminants, results of sample analyses (e.g., percent lipid, percent dry weight, contaminant concentrations) and quality assurance results. Then, reformatting should be carried out, as necessary, to unify the datasets (e.g., into like units and weight basis) and allow a critical evaluation of the data to be made. As part of the data evaluation, caveats or limits that are based on the comparability of the datasets used should be provided with the interpretations that assess their biological relevance.

SC/53/E2. CLARK, E.D. Ozone depletion and global climate change: linkage and interactive threats to the cetacean environment.

SC/53/E3. TYNAN, C.T. US GLOBEC northeast Pacific, northern California current program: An interdisciplinary ecosystem approach to cetacean research.

SC/53/E4. YLITALO, G.M., KRAHN, M.M., YANAGIDA, G., GULLAND, F., CALAMBOKIDIS, J., GOSHO, M., GEARIN, P., NORBERG, B., DUFFIELD, D., HOLAHAN, P., STEIN, J.E. AND ROWLES, T. Supplement to: Organochlorine contaminant concentrations and lipid profiles in eastern North Pacific gray whales (*Eschrichtius robustus*).

SC/53/IA

SC/53/IA1. CLAPHAM, P., BAKER, C.S., BROWN, M., DONOGHUE, M., GARRIGUE, C., GILL, P., GREAVES, J., HAUSER, N., PECKHAM, H., OLAVARROA, C. AND POOLE, M. Assessment of humpback whales from wintering grounds of Areas V and VI: objectives, progress to date and future requirements. *

Humpback whales in Areas V and VI were heavily exploited by commercial whaling, and the present populations have varied recovery histories. The humpbacks in western Area V (i.e. off eastern Australia) appear to be showing high rates of increase; in contrast, the abundance of this species in Oceania (eastern Area V and Area VI) remains relatively low. To determine the status and structure of humpback whale populations in the wintering grounds of Area V and Area VI, an assessment is proposed. Photoid and genetic sampling would be conducted in several areas of Oceania in the winter of 2000, from New Caledonia to French Polynesia; results would be compared to existing data from these areas, as well as from eastern Australia, western South America and the high-latitude feeding grounds off Antarctica. Expansion of field work to selected sites that are currently unstudied would be considered for 2001. Objectives of the assessment would be: (i) to determine the degree of migratory exchange among study sites; (ii) to evaluate whether a reliable estimate of abundance can be obtained for each study site, and for the region as a whole; (iii) to determine relationships of stocks using mitchondrial and nuclear DNA analysis; (iv) to assess the relationship of the wintering areas to summer feeding grounds, and the extent of exchange between Areas V, VI and I; (v) to conduct genetic analyses of stock identity, and for sex determination and genotyping; (vi) to collect data to permit an assessment of habitat use and relative importance of each area as calving or mating grounds; and (vii) to summarize historical catch data from the region in order to assess the status of the modern population relative to pre-exploitation size.

SC/53/IA2. ZERBINI, A.N., ANDRIOLO, A., DA ROCHA, J., SIMOES-LOPES, P.C., SICILIANO, S., PIZZORNO, J.L., WAITE, J. AND DEMASTER, D.P. Winter distribution and abundance of humpback whales off Northeastern Brazil.

SC/53/IA3. STAHL, D. AND BURT, M.L. Minke whale abundance estimation from the 1998/99 IWC SOWER survey.

SC/53/IA4. ALLEN, J. AND CARLSON, C. Report for the year 2000/2001 on the activity of the Antarctic humpback whale catalogue.

College of the Atlantic (COA) has maintained a collection of humpback whale (Megaptera novaeangliae) identification photographs from the Antarctic since 1987. In 1998, the IWC approved funding to support the expansion of this catalogue to members of the IWC, with an aim to substantially improve the accessibility and organization of the database. The collection has been internationally collaborative, with photographic contributions from 132 researchers and opportunistic sources representing 9 countries. During the contract period, the Antarctic Humpback Whale Catalogue received 350 photo-identification images representing 235 individual humpback whales (Megaptera novaeangliae) from Antarctic and southern Hemisphere waters. These images were submitted by eight research organizations from seven countries, and 15 individuals. Of these, 199 were images of the ventral side of the fluke, and 149 were of the dorsal fin and/or flank. These submissions bring the total number of catalogued whales to 1,136. Six matches were made to previously known individuals, including between Southern Ocean sector V and Eastern Australia (1), between the Antarctic Peninsula and Ecuador (1), and between years within the Antarctic Peninsula (3) and within Brazilian waters (1). This report details these findings, and other advances in the Antarctic Humpback Whale Catalog. 2001.

SC/53/NAH

SC/53/NAH1. YONAH, E.C. Population biology of the North Atlantic humpback whale: the YoNAH contribution.

SC/53/NAH2. STEVICK, ALLEN, CLAPHAM, FRIDAY, KATONA, LARSEN, LIEN, MATTILA, PALSBOLL, SIGURJONSSON, SMITH, OIEN AND HAMMOND Trends in abundance of North Atlantic humpback whales, 1979-1993.

SC/53/NAH3. MATTILA, D.K. AND ROBBINS, J. Humpback whale habitat used on the West Indies breeding ground.

SC/53/NAH4. ROBBINS, J. AND MATTILA, D.K. Social composition and dynamics of North Atlantic humpback whales on the West Indies breeding ground.

SC/53/NAH5. STEVICK, P.T., PALSBOLL, P.J., SMITH, T.D., BRAVINGTON, M.V. AND HAMMOND, P.S. Errors in identification using natural markings: rates sources and effects of errors on capture-recapture estimates of abundance.

SC/53/NAH6. LARSEN, F. AND BERUBE, M. Sex ration of West Greenland humpback whales.

SC/53/NAH7. LARSEN, F. AND HAMMOND, P. Distribution and abundance of West Greenland humpback whales.

SC/53/NAH8. STEVICK, ALLEN, CLAPHAM, KATONA, LARSEN, LIEN, MATTILA, PALSBOLL, SEARS, SIGURJONSSON, SMITH, VIKINGSSON, OIEN AND HAMMOND Population spatial structuring on the feeding grounds in North Atlantic humpback whales.

SC/53/NAH9. MATTILA, D., ROBBINS, J., PALSBOLL, P.J., BERUBE, M., SMITH, T.D. AND STEVICK, P. Sex-specific, temporal fidelity of individual humpback whales on their North Atlantic feeding ground.

SC/53/NAH10. CLAPHAM, P., PACE, R., PALKA, D., ROBBINS, J. AND MATTILA, D. Abundance, stock definition and population growth of humpback whales from the Gulf of Maine.

SC/53/NAH11. PALSBOLL, P.J., ALLEN, J., BERUBE, M., CLAPHAM, P.J., FEDDERSEN, T.P., HAMMOND, P.S., HUDSON, R.R., HVIID-ANDERSEN, T., JORGENSEN, H., KATONA, S., LARSEN, A.H., LARSEN, F., LIEN, J., MATTILA, D.K., NYGAARD, F., SIGURJONSSON, J., SEARS, R., SMITH, T., SPONER, R., STEVICK, P. AND OIEN, N. Population structure of the North Atlantic humpback whale, Megaptera novaeangliae.

SC/53/NAH12. ROBBINS, J., MATTILA, D.K., CLAPHAM, P.J. AND BERUBE, M. Regional preference of humpback whales (*Megaptera novaeangliae*)in the Gulf of Maine.

SC/53/NAH13. STEVICK, ALLEN, CLAPHAM, KATONA, LARSEN, LIEN, MATTILA, PALSBOLL, ROBBINS, SIGURJONSSON, SMITH, OIEN AND HAMMOND Migration timing is related to feeding ground origin in North Atlantic humpback whales.

SC/53/NAH14. FRIDAY, HAMMOND, SMITH, ROBBINS AND MATTILA Modelling the effects of behaviour and population dynamics on capture-recapture estimates of abundance of humpback whales.

SC/53/NAH15. REEVES, SMITH AND ALLISON The historical catch of humpback whales in the North Atlantic.

SC/53/NAH16. FRIDAY, PUNT AND SMITH The status of the North Atlantic humpback whales using the catch history and current population parameters.

SC/53/NAH17. SWARTZ Visual and acoustic surveys for humpback and other cetaceans in the waters of Puerto Rico and the Virgin Islands: preliminary results.

SC/53/NAH18. REEVES, R.R., CLAPHAM, P. AND WETMORE, S. Humpback whaling by American Pelagic Whalers at the Cape Verde Islands during the 19th century.

SC/53/NAH19. JANN, B. Humpbacks in the Cape Verde Islands.

SC/53/NAH20. BARCO, S., PABST, A., MCLELLAN, W.A., SWINGLE, M., WEINRICH, M.T., ASMUTIS, R., ROBBINS, J., SETON, R., MALLON-DAY, R., ALLEN, J. AND CLAPHAM, P. Population identity of humpback whales in the waters of the US mid-Atlantic states.

SC/53/NAH21. OIEN, N. Humpback whales in the Barents and Norwegian Seas.

SC/53/NAH22. SWARTZ, S.L. Report of the workshop to review current knowledge of the status of humpback whales in the eastern Caribbean and to discuss, plan and corrdinate future research.

SC/53/O

SC/53/O1. GOVERNMENT OF JAPAN The 2001/2002 Research Plan for the Japanese Whale Research Program under Special Permit in the Antarctic (JARPA). *

SC/53/O2. HEIDE-JORGENSEN, M.P., WITTING, L., JENSEN, M.V. AND DUECK, L. Inshore-offshore movements of a fin whale, *Balaenoptera physalus*, in West Greenland.

SC/53/O3. BJORGE, A. Surveys to estimate abundance of small inshore cetaceans. Cue and observer behaviour when estimating angle and radial distance in narrow waters.

SC/53/O4. LINDSTROM, U., HARBITZ, A. AND HAUG, T. Small-scale studies of minke whales (*Balaenoptera acutorostrata*) foraging behaviour in the southern Barents Sea, with particular reference to predation on capelin (*Mallotus villosus*).

SC/53/O5. SKAUG, H.J. AND TOLLEY, K.A. Assessment of statistical power for the conservation and management of biological populations.

SC/53/O6. DE BOER, M.N. Cetaceans in the Indian Ocean: a preliminary review.

SC/53/O7. WAITE, J.M., FRIDAY, N. AND MOORE, S.E. Cetacean vessel survey in the southeastern Bering Sea, June 2000.

SC/53/RMP

SC/53/RMP1. CUI, G., PUNT, A.E., PASTENE, L.A. AND GOTO, M. A Bayesian approach to addressing stock structure questions using mtDNA data, with an illustrative application to the North Pacific minke whales.*

Bayesian methods using mtDNA data can be used to compare single with multiple stock hypotheses. The likelihood of the data is assumed to be multinomial and the multivariate prior for the probability of having a particular haplotype is of the Dirichlet-b form. The values for the parameters of this prior are assumed to be distributed according to a log-normal hyper-prior to encapsulate assumptions that the haplotype distributions for areas close spatially may be similar due to limited genetic interchange or common ancestry. Illustrative comparisons for the North Pacific minke whales suggest that the hypothesis of multiple stocks in different sub-areas is more likely than that many sub-areas contain a single stock. These comparisons also lend support to the contention that the haplotype frequencies for stocks that are adjacent spatially should not be assumed to be a priori uncorrelated. However, the results depend strongly on the hyper-prior assumed, so that reliable inferences concerning implications for North Pacific minke whale stock structure cannot yet be drawn using this approach. Nevertheless, the approach would seem to have considerable potential; future work should focus upon choice of a less influential prior and simulation testing of the approach.

SC/53/RMP2. SKAUG, H.J. Plans for next year's analysis of the NILS 1996-2001 data.

SC/53/RMP3. OIEN, N. Report of the Norwegian 2000 sighting survey for minke whales.

SC/53/RMP4. OIEN, N. AND SKAUG, H.J. Planning of sightings surveys over the six-year period 2002-2007 to estimate abundance of minke whales in the Northeast Atlantic.

SC/53/SD

SC/53/SD1. PERRIN, W.F. AND MESNICK, S.L. Sexual ecology of the spinner dolphin, *Stenella longirostris*: geographical variation in mating system.

SC/53/SD2. PERRIN, W.F. Draft review of the utility of non-genetic data for differentiating stocks of whales. *

Attempts to differentiate stocks have been based on morphological, distributional, behavioral/physiological, ecological and historical data. Utility, advantages and disadvantages of each category of data and its subtypes are discussed and examples provided from the recent literature.

SC/53/SD3. TIEDEMANN, R. Stock definition in continuously distributed species using molecular markers and spatial autocorrelation analysis.

The recognition of geographically distinct populations and subpopulations is of fundamental importance for conservation and management measures. In principle, a variety of morphological and molecular approaches can be applied to reach this goal. As far as molecular studies are concerned, the assignment of specimens to a priori defined groups and a subsequent genetic comparison among these groups is a frequent approach. In continuously distributed species, however, predefined groups potentially differ significantly in their genetic structure solely due to isolation-by-distance, even in the absence of distinct population boundaries. Here I present an approach to distinguish between (1) population structure primarily determined by isolation-by-distance and (2) the existence of distinct geographical subpopulations: With a spatial autocorrelation analysis of genetic characters, I characterize - as an example - the spatial population structure in Baltic Harbour porpoise (Phocoena phocoena). As a preliminary result, we can distinguish between (1) one stock in the Eastern North Sea/Skagerak, (2) one stock in the Kattegat/Inner Danish waters ICES area IIIas, IIIb, IIIc,IIId-west), and (3) one stock in the Baltic proper (IIId-east).

SC/53/SM

SC/53/SM1. DANILEWICZ, D., CLAVER, J.A., PEREZ CARRERA, A.L. AND SECCHI, E.R. Reproductive maturity and seasonality of male franciscanas, *Pontoporia blainvillei*, from Rio Grande do Sul, southern Brazil.

SC/53/SM2. DANILEWICZ, D. AND SECCHI, E.R. Reproduction of female franciscanas, *Pontoporia blainvillei*, from Rio Grande do Sul, southern Brazil.

SC/53/SM3. REEVES, R.R., READ, A.J. AND NOTARBARTOLO DI SCIARA, G. Report of the workshop on interactions between dolphins and fisheries in the Mediterranean: Evaluation of mitigation alternatives.

SC/53/SM4. SECCHI, E.R., SLOOTEN, E. AND FLETCHER, D. Population viability analysis for a franciscana stock: when is the time for action?

SC/53/SM5. SECCHI, E.R., DANILEWICZ, D. AND OTT, P.H. Applying the phylogeographic concept to identify franciscana dolphin stocks: implications to meet management objectives.

SC/53/SM6. SECCHI, E.R., OTT, P.H. AND DANILEWICZ, D. Report of the fourth workshop for the coordinated research and conservation of the franciscana dolphin (*Pontoporia blainvillei*) in the western South Atlantic.

SC/53/SM7. DALEBOUT, M.L., PICHLER, F.B., LENTO, G.M. AND BAKER, C.S. Molecular genetic identification of odontocete products purchased on the markets of Japan and the Republic of (South) Korea between 1992 and 1999.

SC/53/SM8. DE BOER, M.N. Beaked whales in the Southern Ocean.

SC/53/SM9. CARRETTA, J.V. Preliminary estimates of cetacean mortality in California gillnet fisheries for 2000.

SC/53/SM10. CHIVERS, S.J. AND ROBERTSON, K.M. Life history characteristics of the incidental kill of cetaceans in the California drift and set gillnet fisheries during 2000.

The species composition and reproductive status of the cetaceans observed incidentally killed in the California drift and set gillnet fisheries is summarized for calendar year 2000. In the drift gillnet fishery, approximately 25% of the estimated total effort was observed, and in the set gillnet fishery approximately 27% of the estimated fishing effort was observed. The observed incidental kill of cetaceans included 23 Delphinus delphis, 2 D. capensis, 2 Grampus griseus, 2 Lagenorhynchus obliquidens, 11 Lissodelphis borealis and 7 Phocoena phocoena. Life history data were collected from all of these animals except 1 L. borealis.

SC/53/SM11. TYNAN, C.T. Abundance and distribution of Dall's porpoises in the southeastern Bering Sea and the northeast Pacific, northern California current.

SC/53/SM12. THAYER Reproductive seasonality of bottlenose dolphin in North Carolina.

SC/53/SM13. BREIWICK, J. Field tests of acoustic alarms (pingers) in a salmon drift net fishery in British Columbia, Canada.

SC/53/WW

SC/53/WW1. AGUILAR, N., DIAZ, F., CARRILLO, M., BRITO, A., BARQUIN, J. AND PASCUAL, P. Evidence of cetacean distribution in protected areas in the Canary Islands: habitat alteration, fast speed ferries and whale-dolphin watching.

SC/53/WW2. SIMMONDS, M.P., ROSE, N. AND DE BOER, M.N. Whale watching and critical response parameters.

SC/53/For Information

SC/53/For Information 1. WOSHNER, V.M., O'HARA, T.M., BRATTON, G.R., SUYDAM, R.S. AND BEASLEY, V.T. Concentrations and interactions of selected essential and non-essential elements in bowhead and beluga whales of Arctic Alaska. 2001. *J. Wildl. Dis.* 37: In press

SC/53/For Information 2. COOPER, L.W., LARSEN, I.L., O'HARA, T.M., DOLVIN, S., WOSHNER, V. AND COTA, G.F. Radionuclide contaminant burdens in Arctic marine mammals harvested during subsistence hunting. 2000. *Journal of the Arctic Institute of North America* 53: 174-82

SC/53/For Information 3. ERBE, C. Underwater noise of whale-watching boats and potential effects on killer whales (*Orcinus orca*), based on an acoustic impact model.

SC/53/For Information 4. REEVES, R.R., SWARTZ, S.L., WETMORE, S. AND CLAPHAM, P.J. Historical occurrence and distribution of humpback whales in the eastern and southern Caribbean Sea, based on data from American whaling logbooks. *J. Cetacean Res. Manage.* Submitted

SC/53/For Information 5. O'HARA, T.M., CALABRESE, E.J., BORZELLECA, J.F. AND ROWLES, T. Hormesis and the interpretation of cetacean tissue contaminants data for both impacts to cetaceans and consumers of whale products. *J. Cetacean Res. Manage.* Submitted

The purpose of this paper is to remind investigators of contaminants in marine mammals of the concept of hormesis that should be considered in any evaluation of the potential adverse impacts of natural or anthropogenic environmental pollutants. This phenomenon, "hormesis," recognizes that a biological response (i.e., stimulation) occurs at low exposure levels before an adverse toxicological change (histopathological, behavioral, or biochemical lesion) is observed at a higher level of chemical exposure or at the lowest observed adverse effect level ("LOAEL"). Thus, hormesis is analogous with acclimation and adaptation of a biological system to the presence of a chemical(s). The concept of hormesis has a foundation in known biochemical and metabolic interactions of organisms with chemicals and is basically the process of acclimation. Many metabolic and detoxification systems exist within biota to tolerate or ameliorate chemical insults (via biotransformation, excretion, etc.), and low-level exposures can act as inducers (chronic stimulus keeping the defensive systems operating at a low, but responsive level). If low-level exposure was not present, the systems for detoxification in some cases may be "turned off" resulting in a very delayed

response to an acute chemical insult and the increased likelihood of an increased adverse response (possibly greater effect). The concept of hormesis must be considered for discussions related to contaminant tissue residue or exposure in cetaceans, and to human consumers of whale products. We encourage risk assessors to consider hormesis in describing and studying tissue residue levels, some enzyme levels, and potential adverse effects. Marine mammal scientists should recognize the difference between biomarkers of exposure and biomarkers of effects (adverse) in light of hormesis. Risk assessors should recognize the benefits of marine mammal consumption not only include nutrition (selenium, omega-3-fatty acids, etc.), but also potential hormetic (protective) factors for remotely located (rural, subsistence) whale-product consuming communities with limited nutritional alternatives.

SC/53/For Information 6. PERRYMAN, W.L., DONAHUE, M.A., PERKINS, P.C. AND REILLY, S.B. Gray whale calf production 1994-2000: Are observed fluctuations related to changes in seasonal ice cover? *Mar. Mammal Sci.* In press.

We conducted shore-based sighting surveys to estimate the number of northbound migrating gray whale calves passing Piedras Blancas, California, for seven consecutive years (1994-2000). In addition, we conducted aerial surveys to determine offshore distribution of the migration in 1994 and 1995, measured day/night migration rates with thermal sensors in 1994-1996, and maintained concurrent replicate watches near the peak of each migration to estimate the proportion of the cow/calf pairs missed by the standard watch team. During good weather, we counted 325, 194, 407, 501, 440, 141, and 96 calves during 1994-2000, respectively. Correcting these counts for periods not on watch and for calves missed produced final estimates of 945 calves (SE=68.21) for 1994, 619 calves (SE=67.19) for 1995, 1146 calves (SE=70.67) for 1996, 1431 calves (SE=82.02) for 1997, 1388 calves (SE=91.84) for 1998, 427 calves (SE=41.10) for 1999, and 279 calves (SE=34.79) for 2000. Calf production indices (calf estimate/total population estimate) are 4.2%, 2.7%, 4.8%, 5.8%, 5.5%, 1.7%, and 1.1% for the years 1994-2000, respectively. Fluctuations in calf production over this time period were positively correlated with the length of time that primary feeding habitat was free of pack ice during the previous year.

SC/53/For Information 7. BRANCH, T.A. AND BUTTERWORTH, D.S. Southern Hemisphere minke whales: standardised abundance estimates from the 1978/79 to 1997/98 IDCR-SOWER surveys. *J. Cetacean Res. Manage.* Submitted.*

Minke whale abundance estimates, standardised by the use of consistent methodology throughout, are presented from the IWC/IDCR and SOWER Antarctic circumpolar sightings surveys for three circumpolar sets of cruises: 1978/79-1983/84, 1985/86-1990/91 and 1991/92-1997/98 (*still incomplete). The database estimation package DESS is used to obtain these standardised estimates. Two survey modes (closing and IO) are used in the surveys; IO mode is considered to provide less biased estimates. An updated estimate for the conversion factor from closing to "pseudo-passing" mode of R = 0.826 (CV = 0.089) is obtained. IO and "pseudo-passing" estimates are then combined using inverse-variance weighting to give estimates of 608 000 (CV = 0.130), 766 000 (CV = 0.091) and 268 000* (CV = 0.093) for the three circumpolar sets of cruises. These cruises have covered approximately 65%, 81% and 68% of the ice-free area south of 60oS. As estimates of abundance for Southern Hemisphere minke whales, these are negatively biased because some areas inside the pack ice cannot be surveyed, not all whales migrate into the area south of 60°S, the assumption is made that all whales on the trackline are sighted, and minke whale sightings for which species identification is uncertain ("like minkes") are omitted. The three circumpolar estimates are extrapolated simply to account for the different areas covered in the sets of surveys, and also for the increasing proportion of "like-minke" sightings over time. The results suggest that for comparable areas the abundance estimates for the third circumpolar set of cruises are 55% (closing mode only) and 45% (IO mode only) of those for the second set, but that the first and second set estimates are within 15% of each other. The decrease in abundance between the second and third sets is statistically significant at the 5% level. Possible reasons for this estimated decline are discussed, related both to factors that might render the estimates non-comparable, and to population dynamics effects that could have led to a real decline. Further attention should be given, in particular, to the most appropriate method for estimation of mean school size for these surveys.

SC/53/For Information 8. SWARTZ Visual and acoustic survey of humpback whales in the eastern and southern Caribbean Sea: preliminary findings. *NOAA Tech. Mem.*NMFS-SEFSC-456.

SC/53/For Information 9. BRANCH, T.A. AND BUTTERWORTH, D.S. Estimates of abundance for nine frequently sighted cetacean species based on the 1978/79 to 1997/98 IWC/IDCR-SOWER sighting surveys. *J. Cetacean Res. Manage.* Submitted.*

IWC/53/

IWC/53/7. GOVERNMENT OF BRAZIL. Proposal to establish a South Atlantic whale sanctuary.

Draft agenda for the Review of Southern Hemisphere minke whale abundance estimates
3-4 July 2001

1. Overview of data collection and training methods, noting changes over time.
    - 1.1 IDCR/SOWER cruises
    - 1.2 JSV
    - 1.3 JARPA
2. Review of standard IWC line transect analytical methodology
3. Consideration of factors that may influence abundance estimates and their trend.
    - 3.1. School size estimation
    - 3.2. Stratification/pooling
    - 3.3. Changes in "like-minke" classification incl. its effect on Closing/Passing mode calibration
    - 3.4. Observer efficiency
    - 3.5. Animals missed on the trackline & duplicate identification
    - 3.6. Timing of surveys
        - 3.6.1. Proportion of animals migrating into survey area
        - 3.6.2. Changes in environmental factors: sea temperature, krill distribution, ice cover
        - 3.6.3. 'Stock' identity
    - 3.7. Changes in biological parameters
    - 3.8. Other
4. Dealing with variable partial coverage:
    - 4.1. Simple approaches
    - 4.2. Extrapolation to unsurveyed regions
        - 4.2.1. JSV data
        - 4.2.2. APIS data (within the pack-ice)
        - 4.2.3. JARPA data
5. Updated estimates of abundance
6. Trends in abundance
    - 6.1. Power to detect trends
    - 6.2. Incorporation of "additional variance" in trend estimation
    - 6.3. Role of population dynamics models in trend estimation
7. Future surveys
    - 7.1. Design issues – spatial/temporal coverage; review plans for future cruises
    - 7.2. Objectives – absolute estimates and/or trends
8. Future work