REPORT OF THE FOURTH WORKSHOP FOR THE COORDINATED RESEARCH AND CONSERVATION OF THE FRANCISCANA DOLPHIN (*PONTOPORIA BLAINVILLEI*) IN THE WESTERN SOUTH ATLANTIC

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Introduction

The "*Fourth Workshop for the Coordinated Research and Conservation of the Franciscana Dolphin (Pontoporia blainvillei) in the Western South Atlantic*" (4WPB) took place at the Universidade Federal do Rio Grande do Sul, Porto Alegre, Brazil, from 5 to 9 November 2000. This workshop was sponsored by the Brazilian Institute for the Environment and Renewable Natural Resources (IBAMA), the "Fundação O Boticário de Proteção à Natureza", the MacArthur Foundation, the Cetacean Specialist Group of the World Conservation Union's Species Survival Commission (CSG/IUCN-SSC), International Whaling Commission (IWC), the Yaqu Pacha Foundation and the Cetacean Society International (CSI). Logistical support was provided by the *Grupo de Estudos de Mamíferos Aquáticos do Rio Grande do Sul* (GEMARS), the *Centro de Estudos Costeiros, Limnológicos e Marinhos/Universidade Federal do Rio Grande do Sul* (CECLIMAR/UFRGS) and the *Museu Oceanográfico "Prof. Eliézer de C. Rios"* (MO-FURG). At the Third Workshop in November 1997 in Buenos Aires, Argentina, Eduardo Secchi, Paulo Ott and Daniel Danilewicz assumed the responsibility for organising and coordinating the 4WPB.

The coordinators distributed the working papers (WP) and the tentative agenda to all participants on 05 November 2000 and the workshop proceeded the following morning.

Secchi opened the event by welcoming the participants (Annex I). He also thanked all the sponsors and presented the procedures to be followed during the workshop. Pablo Bordino and Regina Zanelatto were elected *rapporteurs* for the Spanish and Portuguese languages, respectively. Danilewicz read the tentative agenda, which was adopted by all participants after agreeing to Enrique Crespo's suggestion to include "Conservation and Management Proposals" in item 9 (*Action Plans and Recommendations*). Following the revised agenda (Annex II), the presentation schedule for all WPs (Annex III), was discussed. The coordinators invited Crespo to present a brief review and evaluation of the research progress on franciscana over the last two decades. He was the only participant to have attended all workshops related to franciscana, including the workshop on River Dolphins that was held in the People's Republic of China in 1986. Crespo highlighted the marked increase in the amount and quality of research during this period. He explained that this increase is a result of better training of the researchers by the universities in Brazil, Uruguay and Argentina. Crespo also recalled the pioneering studies by Ricardo Praderi and the importance of his contributions to this process. It was emphasised that the workshops on the species are a dynamic process and that their fundamental goal is to identify the needs and priorities of research and conservation to be achieved. Also, Crespo pointed out that some of the priorities defined in the previous workshops have been reached thoroughly whilst others still require attention.

Secchi presented the objectives of the 4WPB, emphasising the continuity of the process and the importance of collaborative studies among researchers from the three main countries. He presented a proposal for re-assessing the IUCN Red List status of the species to up-list franciscana from the current category of "Data Deficient" to the category of "Vulnerable", following the revised IUCN Red List Criteria. All workshop participants agreed that, franciscana is the cetacean species most impacted by fisheries in the western South Atlantic. Since there has been a great deal of new information from numerous recent studies, it was agreed that the conservation status should be re-examined. The participants resolved to produce documentation to support aimed changes to the species' category after re-assessment.

Ott presented a proposal to compile all the available data about the species using maps, divided into seventeen geographic sections (GSs) of 1°30′ of latitude (see figure 1). Thus, available data in each GS could be up-dated and knowledge gaps could be identified in order to determine future regional priorities more effectively.

The presentations of the WPs commenced according to the agenda, as follows:

1. Distribution

There were no changes in the distribution of franciscana. The offshore distribution of this species is roughly limited by the 30m isobath. The coast of the Golfo San Matías, Province of Chubut (Argentina) (GS 17) and the coast of Itaúnas, Espírito Santo State (Brazil) (GS 1), are still the southern and the northern limits of the species' distribution, respectively. However, Siciliano • (WP 16), presented information on gaps in the distribution of franciscana off southeast Brazil, suggesting the existence of two isolated populations in Espírito Santo (geographic sections - GS 1 and 2) and Rio de Janeiro (GS 3 and 4) states, respectively. According to Siciliano, the populations are associated with the run-offs of the Doce and Paraíba do Sul rivers. He emphasised that the lack of records between these two areas was not due to low monitoring efforts. Some factors that could cause this fragmented distribution may be changes in environmental

* All participants of the Fourth Workshop are aware of, and agree with, the information presented in this Report.

• Siciliano used "*boto amarelo*" as the local name for franciscana during his presentation. Rosas showed concerns about the use of different popular names in documents. The use of a standard in nomenclature for scientific and official documents was proposed. Although the name *La Plata River dolphin* has been widely used, *toninha* and *franciscana* were agreed to represent the common names for the Portuguese and Spanish/English languages, respectively. It was reinforced that common names must be followed by the scientific name when the species is first mentioned in a scientific or official document.

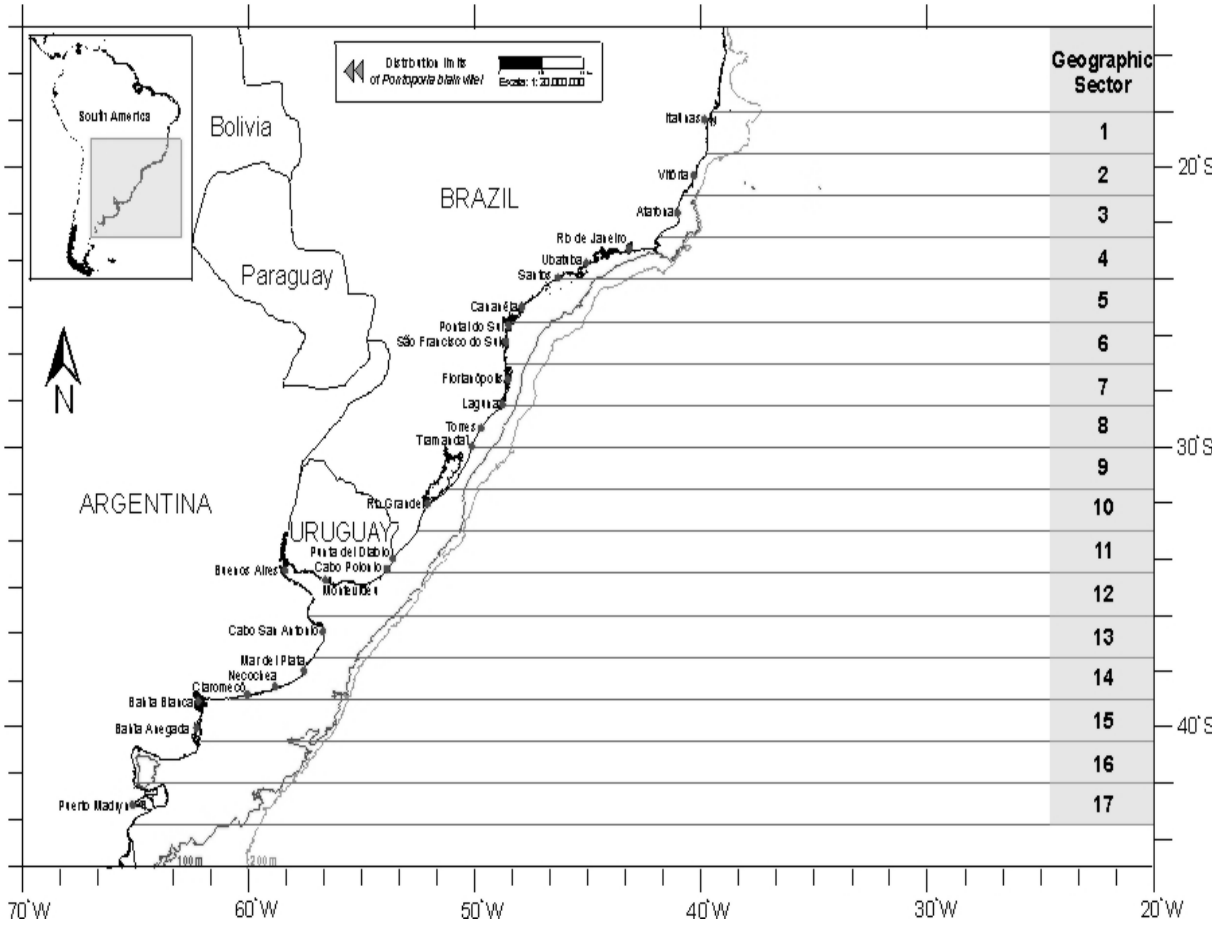

Figure 1 – Map of the franciscana's range. The area was divided in 17 Geographic Sections (GS) in order to update the available data for each GS and determine the main knowledge hiatuses, so that future priorities can be identified more effectively (i.e. in a local basis).

variables (e.g., water temperature and clarity), width of the continental shelf and the presence of predators. However, Siciliano stressed the need to increase monitoring effort in the coastal waters of the Espírito Santo State.

Danilewicz (WP7) presented habitat use patterns for franciscana in the waters of Rio Grande do Sul State (GS 8, 9 and 10), Brazil, based on data from incidentally caught animals. He stated that, with the exception of lactating females (which were found in deeper waters than non-lactating mature females), no differences were found in the depth distribution of individuals depending on sex, age, size and reproductive status. He mentioned that this difference in distribution between the two classes of females is still difficult to explain and also pointed out the existence of a higher proportion of males both juveniles and adults in the northernmost portion of the State's coast.

2. Behaviour

Bordino (WP17) presented information regarding franciscana movement patterns in the Bahía Anegada (GS 15), Argentina. He emphasised the relationship between the presence of the species in the bay and tidal variations. Individuals entered the bay near Isla Jabali during high tides and left the bay near Isla Gama on ebb tides, taking advantage of the tidal currents.

3. Biology and Ecology

Ramos (WP11) reviewed franciscana biology for northern Rio de Janeiro State (GS 3) and reported that the longevity of animals from Rio de Janeiro (GS 3) was shorter than reported in studies from southern Brazil (GS 8 to 10). However, samples from Rio de Janeiro came from incidentally caught animals and is biased to younger individuals whilst samples from southern Brazil included stranded dolphins. Gompertz equation resulted in asymptotic lengths that were greater for females than for males from northern Rio de Janeiro. Rosas mentioned smaller asymptotic lengths for northern Paraná and southern São Paulo states. However, these lengths were calculated using von Bertalanffy equations. This highlighted the importance of standardised approaches to sampling and analyses, especially for comparisons amongst different areas. Possible errors in age estimation of old individuals and implications for these age-related studies were noted. Ramos also presented information about diet, parasite load, diseases and heavy metal

contamination for the northern coast of Rio de Janeiro. The need of establishing standardised protocols for collecting, storing and analysing parasites was stressed.

Bastida (WP21) presented a comparative study on the diet of individuals caught incidentally in estuarine and marine waters off northern Buenos Aires Province (GS 13), Argentina. Marked differences were observed. A higher frequency of cephalopods was found in individuals captured in the marine environment while more juvenile white croackers (*Micropogonias furnieri*) were found in the stomachs of individuals from estuarine waters. This suggested foraging plasticity in franciscana. Recommendations for more detailed studies on the feeding ecology of franciscana were provided by WP21.

Rodriguez (WP25) presented data on the diet of individuals less than 1 year old (arbitrarily defined as individuals < 105cm of total length) for the northern Buenos Aires Province (GS 13). Weaning began at 2.5-3 months, whereas feeding independence started, at approximately 7 months. Crustaceans (Mysidacea) are an important part of the diet of 1 year old franciscanas, which still present a mixed diet of milk and solids. A relationship between the beginning of solid food ingestion and entanglement in fishing nets was suggested.

Bassoi (WP9) compared the diet of franciscana caught incidentally in the Rio Grande do Sul State coast (GS 9 and 10) in recent years with that reported by Pinedo (1982). Temporal changes in the frequency of occurrence of some main prey species coincided with changes in the commercial landing of target fishes. She suggested that these changes might be due to the depletion of fish stocks. In addition, trends in fish stock abundance seemed to dictate trends in prey composition of the franciscana. Therefore, results from a continued long-term evaluation of franciscana diet might help understand oscillation patterns in the recruitment of commercial fishes.

Marigo (WP4) analysed the parasite load of individuals caught incidentally in the coastal waters off Paraná and southern São Paulo (GS 4, 5 and 6) using the methodology proposed by Andrade *et al.* (1997). She found significant differences in the prevalence of *Hadwenius pontoporiae* between the intestines of franciscanas from Paraná and São Paulo (68.4%, this study) and those of franciscanas from Rio Grande do Sul (97.7%, Andrade *et al*. 1997). This supported the hypothesis of different stocks in these locations. Additional analysis of franciscana intestines from the Rio de Janeiro coast and other areas using standardised methodology was recommended.

Caon (WP20) presented preliminary data on the body condition, concentration of total lipids and triglycerides of franciscana from northern Rio Grande do Sul (GS 8 and 9). Standardised protocols for collecting and analysing the composition of lipids were recommended.

Lailson-Brito (WP14) presented results on the analysis of heavy metal contamination in specimens sampled in the Rio de Janeiro coast (GS 3 and 4). The contamination levels were too low to affect the species' reproductive potential. However, Rocha, recommended the analysis of organic tin due to its estrogenic effects, which could compromise the reproductive potential of dolphins inhabiting areas affected by harbour pollution. Lailson-Brito also stated that, as the ages of the individuals increased, the concentration of cadmium decreased and that the kidneys had higher concentrations of this element than the liver. In contrast, there were higher concentrations of all other metals in the liver than the kidneys. Cadmium was found in very low levels in foetuses and calves, indicating that little or no transfer from mother to offspring occurs via the placenta or milk during nursing.

Caon also mentioned the occurrence of gross malformations in the syncranial region of a foetus collected in northern Rio Grande do Sul (GS 8). The cause of this anomaly remains unknown (no WP was presented).

Cremer (no WP was presented) presented preliminary estimates of the relative density of franciscana in the Baia Babitonga, Santa Catarina State (GS 6), Brazil. Although the estimated mean group size was four animals, aggregations of up to 20 franciscanas were observed during foraging activities. Sympatry with the estuarine dolphin, tucuxi (*Sotalia fluviatilis*), was reported in this area. Cremer suggested that franciscana do not avoid engine-powered boats in the bay. Crespo and Kinas recommended the use of suitable sampling design to estimate the absolute abundance of the species in this area. The existence of a resident population was hypothesised. The use of molecular markers was suggested to test this hypothesis. Inclusion of a distinct conservation plan for the franciscana of Baia de Babitonga in the next IUCN-CSG Action Plan was recommended.

Bastida (WP26) presented a comparative analysis of the ingestion of debris between franciscanas caught incidentally in estuarine and marine waters off northern Buenos Aires Province (GS 13). Differences in the debris composition were found between the two areas. Cellophane was predominant in the marine region while plastic and fishing gear debris was most common in the estuarine waters. The species' potential as a bio-indicator of the amount and type of debris discarded into these environments was noted.

Heinzelmann (WP28) commented briefly about her ongoing study of MHC (Major Histocompatibility Complex) genes, that aims to compare the genetic variability of franciscana from Rio Grande do Sul (GS 8, 9 and 10) with other marine mammal species. Secchi suggested comparing MHC differences of franciscanas from different geographical locations to complement other studies on stock characterisation.

Lázaro (WP5) presented her results on the analysis of mtDNA control region sequences of individuals collected in Uruguay (GS 11 and 12), northern Buenos Aires Province (GS 13), Argentina and southern Brazil (GS 9 and 10). The results were compared with those published by Secchi *et al*. (1998), which included animals from Rio Grande do Sul (GS 9 and 10) and Rio de Janeiro (GS 3). Lázaro suggested that franciscanas from Rio Grande do Sul, Uruguay and Argentina may belong to a single large genetic population. She also mentioned that no

haplotypes were shared among individuals from Rio de Janeiro and the other regions. A pairwise analysis of haplotypes considering gene flow and geographic distance between populations suggested that genetic differentiation between populations follows an isolation-by-distance pattern.

Ott and Secchi mentioned a collaborative study of the population genetics of franciscana involving researchers from Brazil, Uruguay, Argentina and Canada. This study is analysing tissue samples collected from the entire range of the species and aims to combine both mitochondrial and nuclear (e.g. microsatellite) DNA data to understand population structuring.

Zanelatto (WP27) presented data on microsatelite analysis using samples from a small group of individuals incidentally caught in Paraná (GS 6) and hypothesised the existence of a matriarchal society for the species. She also presented the results of a comparative analysis of mtDNA control region sequences between these animals and those from Rio Grande do Sul and Rio de Janeiro analysed by Secchi *et al*. (1998). The results indicated that individuals from Paraná were more similar to those of Rio Grande do Sul than to those of Rio de Janeiro and that the population off Rio de Janeiro may be isolated.

Rocha (WP3) presented results of a preliminary study on the use of hormonal concentrations in blubber to determine reproductive status of individuals. Despite the lack of conclusive results due to limited sampling, he recommended further investigations into the suitability of these studies to assess reproductive seasonality of the species.

Danilewicz (WP23) summarised data on reproductive biology of female franciscana based on samples (n=94) collected from dolphins caught incidentally off Rio Grande do Sul (GS 8, 9 and 10). Estimates of the age at sexual maturity, pregnancy rates and reproductive intervals were presented. Births were highly seasonal, with a pulse from October to February (70% between October and December) after an estimated gestation period of 11.2 months. However, the use of other models to estimate gestation period was suggested. Danilewicz (WP 10) also presented information on the age at sexual maturity and reproductive seasonality of male franciscana for the same area. Testicular weight and the diameter of the seminal ducts did not change throughout the year. To complement these results, quantitative analyses on the cellular development of the seminal ducts were suggested. Rocha also pointed out that analysis of hormonal concentration in blubber could be helpful in identifying reproductive seasonality.

4. Vital Parameters and Demography

Secchi (WP13) presented a simple demographic model that simulated the potential rate of intrinsic population growth of a proposed franciscana stock inhabiting the waters of Rio Grande do Sul and Uruguay (GS 8 to 12). Different scenarios were evaluated to determine the effect of incidental mortality due to the coastal gillnet fishery. Even the most optimistic scenario indicated that the stock might be unable to sustain the current level of mortality. The need of prompt management actions on a regional basis was recommended. Based on data of seasonal and spatial differences in the depth of incidental captures for different sexes/age classes, Secchi suggested moving fishing effort to deeper water and/or seasonal reductions of fishing effort (spring and summer) as alternatives to mitigate the problem (see Secchi, 1999). Since the reported spatial differences in the distribution of the species differ markedly from the data presented by Danilewicz (WP7) for the same region, this first alternative should be re-evaluated.

Ramos (WP12) reported on age and growth information for southeastern Brazil (GS 1 to 5). The results indicated a difference in the age distribution between animals incidentally caught in northern Rio de Janeiro (GS 2 and 3) and those stranded in São Paulo (GS 4 and 5) with more older animals being among stranded individuals. Ramos also mentioned that specimens from São Paulo were smaller than those from northern Rio de Janeiro, suggesting a phenotypic difference between the two geographic areas. Skull morphometrics are being analysed to test this difference.

5. Interaction with Fisheries

Rosas (WP2) presented information on fishing activities and incidental captures of franciscana in northern Paraná (GS 6) and southern São Paulo (GS 5). At least 40 dolphins were caught incidentally between 1997 and 1999. Age at sexual maturity of these animals was approximately 4 to 5 years; however, sample size was small. He also reported on the number of animals caught according to net characteristics, but did not account for variation in fishing effort of each type of net. Rosas suggested that for incidental catches of *P. blainvillei*, the fishing area, depth and target-species are possibly more important than mesh size of the nets. No captures were recorded in estuarine waters. Kinas called attention to the importance of recording fishing trips without captures. This data is needed for modelling the by-catch through the frequency distribution of number of dolphins caught per unit of effort, which will result in more accurate estimates.

Vicente (WP19) presented information on beached/stranded franciscanas in Santos and surrounding regions (border of GS 4 and 5), and southern São Paulo (GS 5). Fifty-five dolphins were collected on local beaches from 1997 to 2000. As a result of a public information program, most of the dolphins were reported to the researchers by the community. It was pointed out that some of the beached dolphins showed evidence of fishery interactions. Samples from beached animals are being used for collaborative studies (e.g. genetic) with other research groups. Siciliano stated the importance of continued research effort in the São Paulo State coast and suggested the establishment of an information network amongst groups working in the region.

Bertozzi (WP22) presented data on incidental catches

obtained through interviews and onboard surveys in artisanal fishing boats from Praia Grande (border of GS 4 and 5), São Paulo State coast. Six boats caught 25 dolphins between August 1998 and May 2000. Due to the numerous small fishing villages along the coastline, it was suggested that the number of franciscanas caught in the São Paulo State is of concern. The importance of monitoring these villages was reiterated.

Perez (WP24) presented information on incidental captures in the Buenos Aires Province (GS 13 and 14). By-catch levels seemed to have remained fairly constant over the last 15 years. Based on interviews with fishers, a minimum annual mortality of 400 franciscanas was estimated. There were concerns about the lack of abundance estimates for the area. Bordino and Secchi restated the need to establish onboard observer programs to estimate the level of incidental mortality.

Ott (without WP) reported estimates of CPUE between 1992 and 1997obtained from onboard surveys and interviews in the northern Rio Grande do Sul coast (GS 8 and 9). He also compared CPUE values and mortality estimates with data obtained from beached/stranded franciscanas collected in the same region between 1991 and 2000. He reported that a much smaller mortality estimate was obtained from beached/stranded animals than from the fleet monitoring program (46 against 425 dolphins/year, respectively). He also reported that CPUE was higher during winter months, while higher stranding rates (relative to beach survey efforts) were observed during spring-summer months. He pointed out that the higher fishing effort during the spring-summer months in this region may explain this difference. He also stressed out that mortality estimates obtained from beach surveys should be used with caution for fisheries management decisions. Kinas considered the comparisons appropriate but suggested the inclusion of variance in the estimates.

Kinas (without WP) discussed the idea of fishers marking incidentally killed animals prior to discarding at sea. The objective was to determine the number of marked entangled animals that end up beached on the Rio Grande do Sul coast (GS 8 to 10) in a mark-recapture study. Ott and Secchi expressed their concerns about the loss of important biological information because some fishers bring carcasses back to port for scientific study. Various alternatives and trade-offs were considered to Kinas' proposal. Rosas suggested the use of a different portion of the fleet to implement the experiment and keep unchanged the monitoring method already successfully established for some fishing boats in the region. Crespo emphasised the importance of using onboard observers to collect basic information before discarding the carcasses.

Kinas (WP15) presented results of the analysis of logbook records distributed to skippers of some gillnet boats from southern Rio Grande do Sul (GS 9 and 10). Capture rate of franciscana is higher in nets set for white croaker than in nets set for weakfish (*Cynoscion guatucupa*). The shallower waters of the white croaker fishing areas may explain this difference. He pointed out the aggregated distribution of the captures and reinforced the need to record trips with no franciscana captures to model incidental mortality.

Kinas (WP1) presented a population dynamic model designed for risk assessment using a Bayesian approach. Long-term stranding rates and time series catch rates of Rio Grande do Sul (GS 9 and 10) were used in this model. Different probabilities of quasi-collapse (defined as the probability of the stock declining to less than 10% of its current size) for different levels of fishing effort were used in the model. He concluded that there is a high quasi-collapse probability under the current (or even halved) levels of fishing effort. Crespo suggested modelling density-dependence and differences in the vulnerability to entanglement of different age classes.

Secchi (WP6) presented a population viability analysis for a franciscana stock that included animals from Rio Grande do Sul and Uruguay (GS 8 to 12). He used a model designed for Hector's dolphin (*Cephalorhynchus hectori*) in New Zealand (Slooten *at al*., 2000). The franciscana model was adapted to assess the effect of by-catch in gillnet fisheries on the potential rate of population increase (uncertainties in input parametres and environmental and demographic stochasticity were considered). Even with minimum level of by-catch, more than 60% of the simulations predicted a stock decline. He emphasised that parametres uncertainty did not change the overall conclusions that a high risk of population decline exists under current levels of by-catch. Consequently, there is no reason to delay management action despite the uncertainties in scientific data.

Bordino (WP18) presented the results of an experiment with acoustic deterrents (*i.e.* pingers) attached to artisanal gillnets of Cabo San Antonio (GS 13), Argentina. The experiment reached the objectives of reducing the incidental catches of franciscana in the area. However, the acoustic devices also increased the rate of attacks by southern sea lions (*Otaria flavescens*) on fish caught in the nets. Therefore, the implementation of this kind of acoustic device is inappropriate as a long-term management option in the region. Further studies on this subject should be encouraged and similar experiments with pingers in other small fishing villages (e.g., Praia Grande, São Paulo and Baia de Babitonga, Santa Catarina) are recommended. Ramos and Secchi commented that pingers would be unsuitable in large fishing communities like those from Atafona, northern Rio de Janeiro and Rio Grande, southern Rio Grande do Sul. They also stressed the need to pursue and/or test other alternatives.

6. Abundance Estimates

There has been no progress in estimating franciscana abundance since the pilot study carried out by Secchi *et al.* (2001). Cremer (without WP) presented values of relative density for the Baia de Babitonga (GS 6). Studies to estimate the abundance of populations/stocks using survey designs adapted to the characteristics of each region were again recommended.

7. Stock Structure

Secchi (WP 8) demonstrated the application of a hierarchical method proposed by Dizon *et al*. (1992), which uses a phylogeographic concept for stock definition. The method combines all available information on a species (e.g. distribution, population response, phenotypic and genotypic data) and scores this available information in order to decide if given populations should be split into different stocks or lumped into one stock. He suggested that franciscanas from Rio Grande do Sul and Uruguay (GS 8 to 12) should be considered a single stock and emphasised that management actions at the local level (small scale) tend to be more effective.

Higa (WP 29) mentioned her analyses of cranial morphology and morphometrics along the species distribution. This study also aimed to address population/ stock differentiation. Crespo suggested the use of absolute ages during analyses because most skull measurements tend to vary with absolute age.

8. Legislation and Education

Weiskel (WP 30) carried out interviews with fishers, marine mammal biologists, federal management and enforcement authorities and members of the public in Argentina in an effort to gather information regarding the social, economic and political perspectives concerning the conservation of franciscana. She confirmed a general interest in the conservation of the species, a need for increased biological information and education, and a desire for greater support from federal authorities. She also determined that economic stability was a major concern and the greatest factor affecting the species' conservation status. She recommended to review the conservation strategy to be adopted, in particular with regard to the need for feedback from the Argentine authorities with jurisdiction over the conservation of marine resources.

Ott, Danilewicz and Siciliano mentioned the recent publication of regional lists of endangered species for some of the Brazilian States (e.g. Rio de Janeiro and Rio Grande do Sul). Besides the national list of endangered species published by the Brazilian Institution for Environment and Renewable Natural Resources (IBAMA), the franciscana is now also classified as "vulnerable" by official regional institutions.

Wang (WP 31 submitted after the workshop) presented a review of the newly revised IUCN Red List criteria for assessing the extinction risk of species and the newly established petitions process for appealing statuses. There appears to be sufficient currently available data to assess franciscana. Therefore, "Data Deficient" does not appear to be appropriate. The severity of the impact of the gillnet fisheries will likely result in categorising franciscana as the threatened category of "Vulnerable". However, available data needs to be formally assessed. He stated that, despite the fact that the species faces different levels of threat along its distribution, the IUCN Red List requires an assessment at the species level before units below this level, such as subspecies, populations, will be considered. Also, the IUCN Red List classifications do not take into account political or economic aspects; they are to be based on scientific information only.

9. Future Actions and Recommendations

Working Groups were created in order to review and update information regarding all items considered in the agenda. The objective was to update the current knowledge of the species and to produce a technical document to support the proposal for up-listing franciscana from "Data Deficient" to "Vulnerable" in the IUCN Red List of Threatened Species.

The working groups and their respective participants are listed below:

1. *Distribution and Behavior*: Pablo Bordino, Salvatore Siciliano, Ricardo Bastida and Marta Cremer.
2. *Biology and Ecology*: Daniel Danilewicz, Fernando Rosas, Ricardo Bastida, Juliana Marigo, Mônica Muelbert, Diego Rodríguez, Valéria Ruoppolo, Renata Ramos, Manuela Bassoi, Paulo Ott, José Lailson Brito Jr., Glauco Caon, André Monteiro da Rocha, José Luiz Catão-Dias and Eduardo Secchi.
3. *Vital Rates and Demography*: Paul G. Kinas, Eduardo Secchi, Renata Ramos, Daniel Danilewicz and Enrique Crespo
4. *Abundance Estimates*: Enrique Crespo, Eduardo Secchi, Luciano Dalla Rosa, Paul G. Kinas, Daniel Danilewicz and Pablo Bordino.
5. *Stocks Identification*: Eduardo Secchi, Daniel Danilewicz, Paulo Ott, Renata Ramos, Marila Lazaro, Juliana Marigo and John Wang.
6. *Interactions with Fisheries*: Paulo Ott, Eduardo Secchi, Ignacio Moreno, Daniel Danilewicz, Enrique Crespo, Pablo Bordino, Renata Ramos, Ana Paula Di Beneditto, Carolina Bertozzi, Ricardo Bastida, Regina Zanelatto, Jorge Perez and Paul G. Kinas.
7. *Legislation and Education*: Alejandro Arias, Jesuina da Rocha, Heidi Weiskel, Lilia Fidelix, Cristian De Haro, Marta Cremer, Marila Lázaro and Salvatore Siciliano.

Recommendations

1) To estimate abundance using specific sampling designs according to the area;
2) To continue monitoring the Baia de Babitonga in order to test the hypothesis of a resident population in that area. Genetic studies are also recommended for this purpose;
3) To continue the monitoring of incidental mortality in fishing activities and, whenever possible, to implement an onboard observer program;
4) To continue testing the efficiency of acoustic deterrents (*i.e*. pingers) in reducing franciscana by-catch in small fishing communities (e.g. Baia de Babitonga-SC and Praia Grande-SP, Brazil);
5) To evaluate the viability of alternative fishing methods to minimise franciscana by-catch. Also, pilot studies should be carried out in small fishing villages where

the number and size of boats/nets are smaller and, therefore, easier to implement the experiment;

6) To continue genetic, morphological, parasitological, contamination and other studies that could help in defining management stocks appropriately;
7) To standardise methodological protocols used in various studies (e.g. parasites, contaminants, body condition) to facilitate comparisons between different populations and/or geographical locations;
8) To optimise the collection of biological material and data useful for estimating population parametres of the species;
9) To establish beach and fishery monitoring programs to quantify the occurrence of franciscana in the Espírito Santo State (Brazil), which represents the northernmost limit for the species;
10) To organise specific workshops on abundance estimates and stock assessments;
11) To implement educational programs especially for fishing communities in order to increase public awareness of and participation in the conservation of species and natural resources;
12) To encourage enforcement of existing regulations;
13) To increase information exchange, human resource training and collaborative studies amongst research groups of the three countries;
14) To foster dialogue and cooperation between Uruguayan, Argentine and Brazilian representatives on regional marine resource protection issues;
15) To evaluate the possibilities for implementing multinational conservation and management actions involving Brazil, Uruguay and Argentina within the scope of the MERCOSUL, CMS, the IUCN and UNESCO;
16) To involve local, regional and national representatives - including lawmakers, fishermen, industry heads, researchers, non-governmental organisations, universities, the coast guard and the general public - in workshops, research and other projects regarding the conservation and management of the species;
17) To organise the Fifth Workshop.

Coordinators' Concluding Remarks

All the participants agreed during the 4WPB that *Pontoporia blainvillei* is the cetacean species most impacted by anthropogenic activities (especially by incidental catches in gillnet fisheries) in the western South Atlantic. In addition, there is now strong evidence of a decline in at least one proposed stock. However, it became evident that significant progress has been made since the First Workshop, which was held in Buenos Aires in 1992. Important contributions in genetics, population dynamics, ecology, fishery interactions, modelling, socio-economics and other areas have led us to believe that we are closer to establishing concrete conservation goals supported by scientific information.

As stated in the list of recommendations, basic studies are still needed in many regions of the species' distribution in order to obtain relevant information for effective conservation plans. However, developing action plans and/or experiments to reduce the harmful effects of incidental catches and to increase the chance of long-term survival of the stocks or local populations must be the major task for governments, institutions and individuals interested in the franciscana's conservation. It is hoped that researchers, conservationists, fishers, fishing industry managers and decision-makers from Brazil, Uruguay and Argentina, can cooperatively commit to the pursuit of this important endeavour.

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ANNEX I

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ANNEX II

APPROVED AGENDA

1) DISTRIBUTION

a) Limits
b) Habitat characteristics
c) Seasonal variation
d) Sexual and age segregation
e) Migration
f) Habitat Use

2) BEHAVIOUR (FREE-RANGING AND CAPTIVITY)

a) Diving
b) Acoustics
c) Group size and composition

3) BIOLOGY AND ECOLOGY

a) Morphology, physiology and histology
b) Feeding habits
c) Predators
d) Parasite loads
e) Contaminants
f) Genetics
g) Growth
h) Reproduction

4) VITAL PARAMETERS AND DEMOGRAPHY

a) Age structure
b) Age at attainment of sexual maturity
c) Fecundity
d) Survivorship
e) Longevity
f) Rate of population increase

5) INTERACTIONS WITH FISHERIES

a) Fleet size, fishing gears and target species
b) Social and economic aspects of the fisheries
c) Catch per unit effort (CPUE) by areas and seasons
d) Time series of mortality and trends
e) Age and sexual distribution of the by-catch
f) Use of caught animals
g) Experiments carried out with fishing nets

6) ABUNDANCE ESTIMATES

a) Methodologies
b) Results obtained
c) New sampling designs and research possibilities

7) IDENTIFICATION OF STOCKS

a) Distribution Data
b) Population Response Data
c) Phenotypic Data
d) Genotypic Data

8) LEGISLATION AND EDUCATION

a) Update on national and international legislation concerning the protection of the species
b) Educational Programs

9) FUTURE ACTIONS AND RECOMMENDATIONS

a) Priorities for research
b) Conservation and management proposals
c) Human resources training
d) Fifth Workshop

ANNEX III

LIST OF WORKING PAPERS PRESENTED AT THE 4WPB

Document	Title	Author(s)
WP1	The impact of incidental kills by gillnets on the franciscana dolphin (*Pontoporia blainvillei*) in southern Brazil.	Kinas
WP 2	Incidental catches of franciscana dolphins (*Pontoporia blainvillei*) on the southern coast of São Paulo State and the coast of Paraná State, Brazil.	Rosas *et al.*
WP 3	Preliminary results on reproductive category determination of *Pontoporia blainvillei* by steroid hormone concentrations in blubber	Rocha *et al.*
WP 4	Intestinal parasites of *Pontoporia blainvillei*, from the states of Paraná and São Paulo, Brazil.	Marigo *et al.*
WP 5	Genetic varuation and population structure of franciscana: new data based on samples from the Uruguayan coast.	Lázaro
WP 6	Population viability analysis (PVA) for a franciscana stock: when is the time for action?	Secchi *et al.*
WP 7	Habitat use patterns in Rio Grande do sul, southern Brazil, indicated by incidental catch and beach survey data.	Danilewicz *et al.*
WP 8	Applying the phylogeographic concept to identify franciscana dolphin stocks: implications to meet management objectives.	Secchi *et al*
WP 9	Temporal variation in the diet of franciscana *Pontoporia blainvillei* (Cetacea, Pontoporiidae) as a consequence of fish stocks depletion off southern Brazil.	Bassoi and Secchi
WP 10	Sexual maturity and seasonality in the reproduction of males of franciscana, *Pontoporia blainvillei*, in the Rio Grande do Sul, Brazil.	Danilewicz *et al.*
WP 11	*Pontoporia blainvillei* (Gervais & D'Orbigny, 1844) in the Northern Rio de Janeiro State (21º18'S-22º2'S), Brazil.	Di Beneditto and Ramos
WP 12	Preliminary information on the age and growth of *Pontoporia blainvillei* in southeasthern Brazil.	Ramos *et al.*
WP 13	Evidences of decline of a franciscanas, *Pontoporia blainvillei*, stock due to by-catch in gillnets.	Secchi and Kinas
WP 14	Concentration of heavy metals in the liver and kidney of franciscana, *Pontoporia blainvillei*, in northern Rio de Janeiro State, Brazil.	Lailson-Brito *et al.*
WP 15	Statistical analysis on the log-books and the mortality of franciscana, *Pontoporia blainvillei*, in the coastal gillnet fleet of Rio Grande, southern Brazil.	Kinas *et al.*
WP 16	Isolated populations of franciscana, *Pontoporia blainvillei,* in southeastern Brazil – considerations on the habitat use and conservation issues	Siciliano *et al.*
WP 17	Movement patterns of franciscana, *Pontoporia blainvillei,*,in Bahia Anegada, Buenos Aires, Argentina.	Bordino and Thompson
WP 18	The use of acoustic alarms as a tool for mitigating the incidental mortality of franciscanas, *Pontoporia blainvillei*, in gillnets .	Bordino *et.al*
WP 19	Franciscana, *Pontoporia blainvillei*, in the coast of São Paulo State, Brazil.	Vicente *et al.*
WP 20	Preliminary data on the lipidic contents in franciscanas (*Pontoporia blainvillei*) from northern Rio Grande do Sul, southern Brazil.	Caon and Kucharski
WP 21	Trophic ecology of franciscan (*Pontoporia blainvillei*) in estuarial and marine environmentsin northern Argentina.	Rivero *et al.*
WP 22	Incidental captures of franciscana, *Pontoporia blainvillei*, in the artisanal fishery off Praia Grande, São Paulo State, Brazil.	Bertozzi and Zerbini
WP 23	Reproduction of females franciscanas, *Pontoporia blainvillei,* in Rio Grande do Sul, southern Brasil.	Danilewicz and Secchi
WP 24	Incidental mortality of franciscana (*Pontoporia blainvillei*) in fisheries off Buenos Aires Province, Argentina.	Cappozzo *et al.*
WP 25	Birth, lactation and feeding strategies of franciscana (*Pontoporia blainvillei*) during its first year of life.	Rodríguez *et al.*
WP 26	Unusual presence of anthropogenic debris in the stomach contents of franciscana (*Pontoporia blainvillei*).	Bastida *et al.*
WP 27	Matrilineal society in the franciscana dolphin: A molecular clue.	Zanelatto and Valsecchi
WP 28	Ongoing studies on the genetic variability in the major histocompatibility complex (MHC) of franciscana, *Pontoporia blainvillei*, in the Rio Grande do Sul, Brazil.	Heinzelmann and Hagg
WP 29	Taxonomy and geographic variation of *Pontoporia blainvillei*.	Higa
WP 30	Conservation of the franciscana *Pontoporia blainvillei* in Argentina.	Weiskel and Bordino
WP 31	IUCN Red List and the Status of Franciscana, *Pontoporia blainvillei*.	Wang

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