AGREEMENT ON THE INTERNATIONAL DOLPHIN CONSERVATION PROGRAM

39TH MEETING OF THE PARTIES

Bilbao, Spain
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DOCUMENT MOP-39-01 ADDENDUM 1 (REVISED)

DESIGN OF A SURVEY FOR EASTERN TROPICAL PACIFIC DOLPHIN STOCKS

This document provides a revised budget (Table 1) for a trial survey and a main survey for the northeastern offshore spotted dolphin and the eastern spinner dolphin, using one research survey vessel, to estimate both absolute and relative abundance (Design 3, main survey option 1, addressing Objectives 1 and 2, for priority stocks B; see MOP-37-02). The time line presented in Section 2.3.4 of MOP-37-02 for the main survey is still considered feasible, as long as the drones can be demonstrated to perform the required protocol (see MOP-37-02), funding for those survey costs not provided "in-kind" (see below) can be promptly secured, and the trial survey can be conducted prior to the end of 2019. At the time of drafting this document, the survey vessel (see below) was available for a 14-day trial survey in November 2019 and a 120-sea-days main survey in July – December 2020. If the drones are unable to perform the required protocol, a different drone provider may need to be considered and/or the survey objectives, design and budget revised.

The survey area covered under Design 3 is the combination of the National Marine Fisheries Service (NMFS) survey areas CORE, CORE2 and NORTH COASTAL (Figure 1). As noted in MOP-37-02, the CORE and NORTH COASTAL areas define the northeastern offshore spotted dolphin stock, and with the CORE2 area, are believed to largely contain the eastern spinner dolphin (see text and references of Section 2.2 of MOP-37-02). In addition, per Section 2.3.3 of MOP-37-02, the precision of estimates produced by Design 3 for the northeastern offshore spotted dolphin and the eastern spinner dolphin would be expected to be the same as for previous NMFS surveys because, although two survey vessels were used previously, one mostly operated in the CORE + CORE2 + NORTH COASTAL region while the other operated in the OUTER and SOUTH COASTAL areas. However, Design 3 is not a viable option for monitoring abundance of the other eight dolphin stocks covered by previous NMFS surveys. Using Design 3 will only allow estimating abundances of two stocks, the northeastern offshore spotted dolphin and the eastern spinner dolphin.

A comparison of the original survey budget for Design 3 with one research vessel (Table 12 of MOP-37-02) and the revised budget shown below in Table 1, is presented in Table 2. Differences between the two budgets are due to: additional in-kind contributions and changes to a few components of the survey plan. In addition to the in-kind funding offered by the government of Mexico for all costs associated with the survey vessel, the revised budget reflects additional in-kind funding to be provided by the government of Mexico for:

- The costs of two junior marine mammal observers;
- All costs associated with the ship agent and port fees;
- All drone-related costs except the amount shown in Table 1;

- All costs associated with the logistical coordinator position.

The changes to a few components of the survey plan of Design 3 (main survey option 1) are intended to achieve a reduction in survey cost while still maintaining scientific quality. Those changes are:

- Marine Mammal observers: the use of tuna vessel observers for the two junior positions out of the six marine mammal observers. The remaining four observers will be experienced eastern tropical Pacific marine mammal observers familiar with the NMFS survey protocol (two at senior level, two at intermediate level). All marine mammal observers will undergo training in marine mammal survey techniques and species identification. The senior marine mammal observers will lead each of the two 3-observer teams.
- Survey vessel: the use of the INAPESCA research vessel, the Jorge Carranza, instead of the Ocean Starr. The Jorge Carranza has similar characteristics to the Ocean Starr. It is a newer vessel, built in 2013.
- Drones: the drones and drone technicians will be provided by Gtt NetCorp (www.gttnetcorp.com) instead of Precision Aviation. A one-day proof-of-concept trial will be conducted by Gtt NetCorp aboard the Jorge Carranza to demonstrate drone capabilities. At present, it is not known whether the drone providers can carry out the planned survey protocol. If they cannot, additional funding may be required to revert to one of the drone providers suggested in MOP-37-02 (see Table 2 below for budget details and Section 2.6 of MOP-37-02 for drone operations details).

In summary, with the in-kind contributions to be provided by the government of Mexico, the cost of the trial survey would be US$800,350 and the cost of the main survey would be US$1,738,990, for a combined total of US$2,539,340 (Table 1).

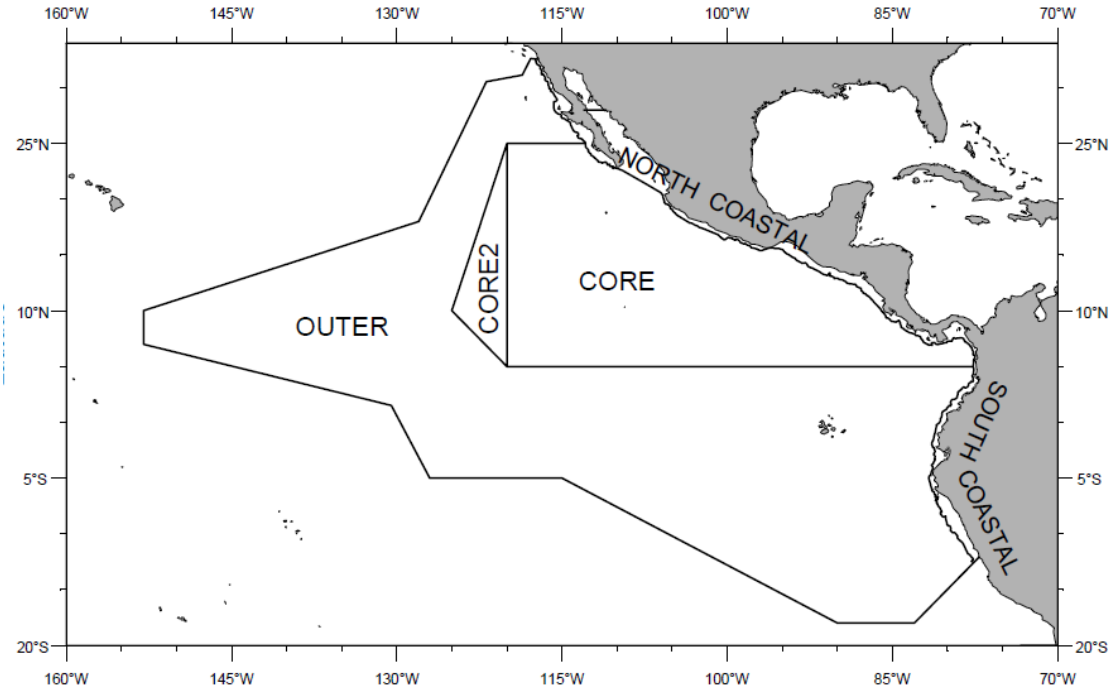

FIGURE 1. Strata for the STAR06 cruise (from Gerrodette. T., Watters, G., Perryman, W., Ballance, L. 2008. Estimates of 2006 dolphin abundance in the eastern tropical Pacific, with revised estimates from 1986-2003. NOAA-TM-NMFS-SWFSC-422).

TABLE 1. Budget outline for a 14-day trial and the main survey with one research vessel (assumed to be the Jorge Carranza), for priority stocks B (Design 3, main survey option 1, as outlined in IATTC Document MOP-37-02). The budget shown below is based on the assumption that the following in-kind costs will be provided by the government of Mexico: all daily operating costs of the research vessel; all costs related to outfitting the research vessel for the survey, including the cost of construction and installation of a flying bridge platform for marine mammal observers and binocular mounts, transit costs to/from various ports for loading/unloading the vessel, all costs associated with a ship inspection by the chief scientist in the ship's home port, including a trial run (~half day) at sea, and all port call costs; all costs, in excess of the amounts shown in the table below, that are associated with drone operations and collection of high-resolution imagery (e.g. drone rental or purchases, fuel, all equipment required for collection/transmission/storage of high-resolution imagery, drone operators, all further equipment required to operate the drones as well as the installation of a drone platform on the vessel) and two fully-trained drone marine mammal observers (e.g., salaries, training, travel); and, the salaries, training costs and travel of two junior marine mammal observers. The dollar value for most of the in-kind contributions are not available, and therefore the value of the in-kind contributions is not shown. [a]: All costs, in excess of the amounts shown in square brackets, to be fully covered by the government of Mexico (i.e., the in-kind funding noted above). [b] : It is assumed that all equipment purchased for the trial survey will be carried over into the main survey. [c]: A 5% contingency computed on non-salary costs that are not provided in-kind, and to be used, if necessary, to cover unanticipated expenses. Numbers shown in bold font indicate section totals. The cost of project support from existing IATTC staff is not included in the budget.

	14-day trial Jorge Carranza	Main survey 1 ship Jorge Carranza
	(US$ 1000)	(US$ 1000)
Cetacean abundance		
Chief Scientist	99.41	280.79
Scientific support to Chief Scientist	87.82	181.50
Cruise leaders	22.29	123.66
Marine Mammal Observers	[71.43[a]]	[344.42[a]]
Survey coordinator	52.00	88.76
	[332.95[a]]	**[1,019.13[a]]**
Vessels and associated costs		
Survey vessels	[0.00[a]]	[0.00[a]]
Ship agent + Port fees	[0.00[a]]	[0.00[a]]
	[0.00[a]]	**[0.00[a]]**
Foreign observers		
Travel	**2.00**	**8.00**
Drones		
Equipment rental/purchase & operators	[1.41 [a]]	[5.64 [a]]
Observers	[32.70 [a]]	[161.14 [a]]
Fuel	[0.04 [a]]	[0.35 [a]]
	[34.15 [a]]	**[167.13** [a]]
School size calibration		
Image analyses	58.01	56.57
Data cleaning and analyses	13.82	41.46
	71.83	**98.03**
Trackline detection probability		

Image analyses	38.34	61.05
Data cleaning and analyses	20.73	55.28
	59.07	**116.33**
Equipment		
Computers	17.38	[0.00[b]]
Flying bridge	104.36	[0.00[b]]
Communications	17.77	164.17
Research permits	3.00	7.50
Miscellaneous travel	6.00	15.00
IT specialist	10.34	2.32
	158.85	**188.99**
IATTC headquarters-based contractors		
Accountant	130.57	124.04
Logistical coordinator	[0.00[a]]	[0.00[a]]
	130.57	**124.04**
Ship loading	**3.00**	**6.00**
Contingency [c]	**7.93**	**11.34**
Total	**[800.35[a]]**	**[1,738.99[a]]**

TABLE 2. Comparison of original budget for Design 3 with main survey option 1 (Table 12 of MOP-37-02, corrected for typographical errors) and the revised budget shown above in Table 1. The costs for the original budget was based on the use of the research vessel Ocean Starr. [a]: All costs, in excess of the amounts shown in square brackets, to be fully covered by the government of Mexico (i.e., the in-kind funding noted above). [b] : It is assumed that all equipment purchased for the trial survey will be carried over into the main survey. [c]: A 5% contingency computed on non-salary costs not are not provided in-kind, and to be used, if necessary, to cover unanticipated expenses. [d]: The reduction in the cost of foreign observer travel reflects a reduction in the number of survey legs required (the Jorge Carranza can remain at sea for a longer period of time than the Ocean Starr). Numbers shown in bold font indicate section totals.

	Original budget 14-day trial	Revised budget 14-day trial	Original budget main survey	Revised budget main survey
Cetacean Abundance				
Chief Scientist	99.41	99.41	280.79	280.79
Scientific support to Chief Scientist	87.82	87.82	181.50	181.5
Cruise Leaders	22.29	22.29	123.66	123.66
Marine Mammal Observers	98.10	[71.43 [a]]	477.77	[344.42 [a]]
Survey Coordinator	52.00	52.00	88.75	88.76
	359.62	**[332.95 [a]]**	**1,152.47**	**[1,019.13 [a]]**
Vessels and associated costs				
Survey Vessels	720.32 [0[a]]	[0.00 [a]]	2,665.84 [0 [a]]	[0.00 [a]]
Ship agent + Port fees	20.25	[0.00 [a]]	145.25	[0.00 [a]]
	740.57 [20.25 [a]]	**[0.00 [a]]**	**2,811.09 [145.25 [a]]**	**[0.00 [a]]**
Foreign observers				
Travel	**2.00**	**2.00**	**12.00**	**8.00[d]**
Drones				
Equipment rental	420.00	[1.41 [a]]	2,040.00	[5.64 [a]]
Observers	32.70	[32.70 [a]]	161.14	[161.14 [a]]
Fuel	0.26	[0.04 [a]]	1.98	[0.35 [a]]
	452.96	**[34.15 [a]]**	**2,203.12**	**[167.13 [a]]**
School size calibration				
Image analyses	58.01	58.01	56.57	56.57
Data cleaning and analyses	13.82	13.82	41.46	41.46
	71.83	**71.83**	**98.03**	**98.03**
Trackline detection probability				
Image analyses	38.34	38.34	61.05	61.05
Data cleaning and analyses	20.73	20.73	55.28	55.28
	59.07	**59.07**	**116.33**	**116.33**

Equipment				
Computers	17.38	17.38	0.00[b]	0.00 [b]
Flying bridge	104.36	104.36	0.00 [b]	0.00 [b]
Communications	17.77	17.77	164.17	164.17
Research permits	3.00	3.00	7.50	7.50
Miscellaneous travel	6.00	6.00	15.00	15.00
IT specialist	10.34	10.34	2.32	2.32
	158.85	**158.85**	**188.99**	**188.99**
IATTC headquarters-based contractors				
Accountant	130.57	130.57	124.04	124.04
Logistical coordinator	112.01	[0.00 [a]]	106.41	[0.00 [a]]
	242.58	**130.57**	**230.45**	**124.04**
Ship loading	**3.00**	**3.00**	**6.00**	**6.00**
Contingency[c]	**67.35 [31.34]**	**7.93**	**260.94 [127.65]**	**11.34**
Total	**2,157.82 [1,401.49 [a]]**	**[800.35 [a]]**	**7,079.31 [4,280.18 [a]]**	**[1,738.99 [a]]**