

## SEA METHODOLOGY

The aim of MONICET is to create a union between the commercial operation of Whale and Dolphin Watching and scientific research so in order to reach this goal we prefer to collect less information, but of better quality rather than a lot of information of not so good quality.

We can divide the information in different fields:

- Company info (boat, skipper, guide....)
- Atmospheric info (Sea State, visibility)
- Effort Data (Time, and GPS)
- Sighting Data (Specie, General Behaviour, N° of Individuals...)

To fill the forms there are 6 different codes:

- I:** Beginning of the trip
- F:** End of the trip
- IA:** Beginning of a sighting
- RA:** Register inside the sighting (or isolated sighting without stop)
- FA:** End of sighting
- R:** Register in order to write down time, GPS and Sea State for effort calculations.

### Company Info:

Important to establish the records on the database, and know who makes every sighting.

These fields are gathered at the beginning of the trip, and are:

- Skipper
- Boat
- Guide (or biologist on board)

### Atmospheric Info:

In order to know the atmospheric conditions and establish the liability of the data we establish some fields. This data is gathered at the beginning and during the trip, at every new register in order to know how the atmospheric conditions evolved.

The fields are:

- Visibility or detectability: Approximate distance where cetacean detection can be done. 4 different conditions.
  - 1= Very Bad (less than 1km)
  - 2= Bad (1 to 5 km)
  - 3= Good (5 to 10 km)
  - 4= Very Good (more than 10 km)

- Sea State: 7 states following the Beaufort scale.
  - 0 = Calm. Flat.
  - 1= Ripples without crests.
  - 2= Small wavelets. Crests of glassy appearance, not breaking.
  - 3= Large wavelets. Crests begin to break; scattered whitecaps.
  - 4= Small waves with breaking crests. Fairly frequent white horses.
  - 5= Moderate waves of some length. Many white horses. Small amounts of spray.
  - 6= Long waves begin to form. White foam crests are very frequent. Some airborne spray is present.

### **Effort Data:**

The effort is an important field in the data in order to establish later the temporal and also the spatial effort to have a more useful database to work with. So to quantify the effort at the beginning of each trip is noted the depart time and GPS.

Also every time there is a new sighting the Time and GPS are noted. During the sighting if spend more than 20 minutes with the animals then is asked for another register with the Time, GPS and number of individuals, in order to follow the track.

### **Sighting Data:**

With the sighting data we pretend to obtain the information of the species sighted during each trip. There are 5 fields:

- Specie: There are all the usual species sighted usually in the Azores in a 2 letters code (ex. *Delphinus delphis*: Dd). For the Beaked whales there is also a general code (Zp), to avoid confusions due to the difficulty of identification.
- Behaviour (or activity state): in order to simplify just 4 activity states at first contact are established.
  - Feeding: Any obvious feeding activity or related (chasing, searching...). In sperm whales, fluking is considered as a feeding activity state.
  - Resting
  - Socializing: In this category it is included all the mating, dominant and other kind of behaviours where there are interactions between individuals
  - Travelling: Slow or fast travelling.
- Number of Individuals: Described as Best Estimative number. It has to be taken after some minutes of observation to take a look at the whole group. In some cases the Lookout can help with a more general view. Also is asked (when is possible) to look at the number



**Fig.1.** Example of Sea Data Sheet

DATA _____ HORA SAÍDA _____ HORA CHEGADA _____		Tunistas _____ DISTÂNCIA RECORRIDA _____		<b>MONICET (SÃO MIGUEL V.1.0)</b>				SKIPER: _____ EMBARCAÇÃO _____		GUILTA: _____ GPS BASE _____		LAT _____ LON _____			
Enc	Cod.	Hora	Latitude (DD:MM,M)	Longitude (DD:MM,M)	Estado do Mar	Vis.	Espécies	Total	A	J	C	Comp. Geral	Aso.	Num. Emb.	Comentários
0	1		BASE	BASE											
1															
2															
3															
4															
5															
6															
7															
8															
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<b>BEAUFORT (Estado do Mar):</b> 0= calmaria, mar espelhado. 1= Pequenas rugas na superfície do mar 2= Ligeira ondulação sem reboentação(4-6 kts) 3= Ondulação até 1 m, com alguns carneiros (7-10 kts) 4= Ondulação até 1,5 m, carneiros frequentes (11-16 kts) 5= Ondulação até 2,5 m, muitos carneiros (17-21 kts) 6= Ondas grandes até 3,5 m, borrifos (22-27 kts)	<b>Odontoceti</b> Sf= Golfinho Piratado Tr= Roaz Sb=Caldeirão Em = Baleia Piloto Dd = Golfinho comum Sc= Golfinho riscado Egs= Golfinho de Riso Pm= Cachalote Oo= Orca Pc = Falsa Orca
<b>VISIBILIDADE</b> 0= Menos de 1 km. 1-De 1 a 5 km 2-De 5 a 10km 3-De 10km a 15km 4=Mais de 15km	<b>Mysticeti</b> Bm= Baleia Azul Bp= Rorqual comum Bb= Baleia Sardinheira Mm= Balia de bossa Be=Baleia de Bryde Ba= Baleia anã Tartarugas Cc= Tartaruga-careta Dc= Tartaruga-de-couro Cm= Tartaruga-verde Em= Tartaruga-de-escamas Lk= Tartaruga-de-Kemp
<b>CODIGOS:</b> I=Início F= Fim IA= Início Avistamento FA= Fim Avistamento R= Registro PA=Periclitro, Avistamento	<b>Comportamento</b> 1= Socialização 2= Alimentação 3=Deslocação 4=Reposo
<b>Zp= Baleia de bico</b> Mb= Baleia de bico de Sowerby Am= Baleia de bico de True Ha= Botlhoso Kh= Cachalote Primitivo	<b>Associação</b> 1= Nada 2= Passaros 3= Atum 4= Juncarras ou tubarões 5= Outros Cetáceos 6= Outros animais