

AGONISM DEVELOPMENT IN BOTTLENOSE DOLPHIN

CALVES IN A CONTROLLED ENVIRONMENT: EVENT TIME SEQUENCES



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INTRODUCTION

Agonism represents a fundamental element for the establishment of hierarchies in such complex societies as cetaceans ones. In some circumstances agonistic behaviours occur together in a concerted manner; in others, the events are discrete, with recognizable intermediates occurring between them. Since the time sequence of events could provide a means of classification, the aim of this study was to draw the attention to the development of bottlenose dolphin (*Tursiops truncatus*) calf behavioural series, starting from an aggressive display, such as "chasing", "biting" or "tail hitting".

METHODS

Three calves (see Table 1 for details) at the Rimini Delfinario (Italy), were focally observed, in three different periods (1995, 1997 and 2003), through systematic observations during their first year of life, for a total of 546 hours.

A specific behavioural catalogue and Observer Lag Sequential Analysis were applied to obtain transition matrices and significant flux diagrams ($p < 0.05$).

The acts' concatenations were analyzed according to **A) the growth of the calves** (first semester vs second semester of life) and **B) the different animals** interacting with them (mother vs other individuals).

TABLE 1: SUBJECTS OF THE STUDY

LUNA	BLUE	ROCCO
FEMALE	FEMALE	MALE
12 May 1995	26 Jun 1997	27 Sep 2003

RESULTS AND CONCLUSIONS

BEHAVIOURAL CATEGORIES:

AGGRESSIVE

LOCOMOTORY

SOCIAL

MOTHER/CALF

AERIAL

BUBBLE

PLAY

FIGURE 1 – BEHAVIOURAL SEQUENCES DEPENDING ON THE CALF GROWTH

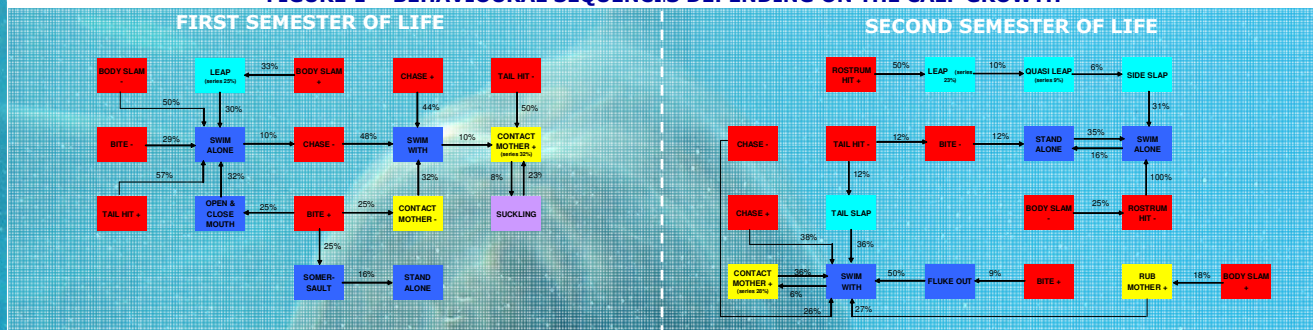


FIGURE 1: Despite the different characteristics of the subjects (e.g. sex, parents, group composition), after an aggression, independently given or received, young reactions revealed to progress in complex sequences since the early stages of life.

During the first six months, the direction of the flux led the calves to mainly exhibit, after the conflict, locomotory behaviours. In particular, leaping and regular swimming were the most probable displays after an active assault, while moving in tight association with the mother appeared when the attack was suffered.

On the other hand, even if bigger, in the second semester calves preferentially showed sequences including reiterated aggressions by conspecifics (e.g. body slam followed by rostrum hit or tail hit followed by bite).

FIGURE 2 – BEHAVIOURAL SEQUENCES DEPENDING ON THE INTERACTING DOLPHINS

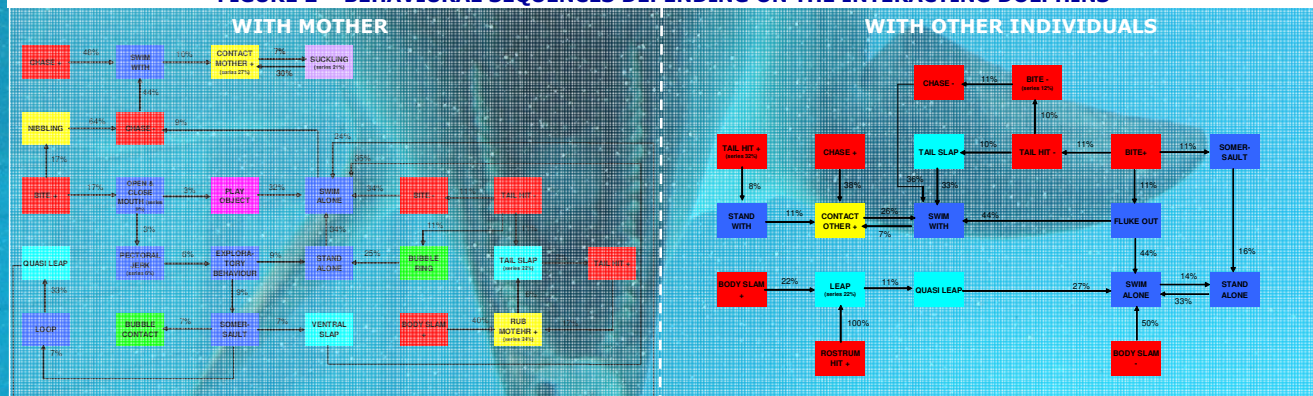


FIGURE 2: A clear complexity characterized the diagrams of both the mother and other individuals. However, while the sequences involving the parent revealed to converge to social/reconciliative behaviours, such as contacts and rubbing, with the other individuals the calves were inclined to finish with regular swimming.

Moreover, in the second case, when the calves start an attack by biting a firm aggregation of aggressive acts was observed.

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