

BEHAVIOURAL REPERTOIRE EXPANSION IN CAPTIVE BOTTLENOSE DOLPHIN (*Tursiops truncatus*) CALVES



Raffaella Tizzi¹ and Erika Esposti Apiccino²

¹ Delfinario Rimini, Lungomare Tintori 2 – 47900 Rimini, Italy (raftizzi@tin.it)

² Università Politecnica delle Marche, Ancona, Italy



INTRODUCTION

From an ethological point of view, dolphins' development with age seems to be founded on a progressive expansion of their behavioural repertoire, determinant for both calf survivorship and adult skills acquisition. The aim of this study was to quantitatively investigate, on a weekly base, when and in what circumstances bottlenose dolphin calves for the first time show new behavioural elements carrying on this enhancing process.

METHODS

Three calves, one male and two females, were systematically observed at Rimini Delfinario (Italy) from birth throughout the first year of life. In particular, via a total of 546 hours of focal observations, the study recorded the first appearance of 57 behavioural units, included in an *a priori* set up catalog.

Delfinario
Rimini

Built in: 1964	Surface: 314 m ²	Capacity: 1500 m ³
Shape: round	Diameter: 20 m	Max depth: 5.5 m



SUBJECTS	LUNA	BLUE	ROCCO
SEX	Female	Female	Male
BIRTH	12 May 1995	26 Jun 1997	27 Sep 2003
PARENTS	Alfa x Speedy	Beta x Speedy	Alfa x Speedy

RESULTS

FIG 1: In the first year of life the calves appear to improve their repertoire performing new displays in coincidence with two main incremental periods. While the first one, the most intense, runs from the first week to about the end of the fourth month when all the calves reveal the ability to exhibit about the 80% of the studied patterns, the second phase ranging between weeks 25 and 35, leads the animals to reach 90% levels. However, the young male (Rocco) seems slower, performing fewer behaviours than the females until weeks 30-32, when he finally reaches and definitively overtakes them.

FIG. 1 – BEHAVIOURAL REPERTOIRE EXPANSION

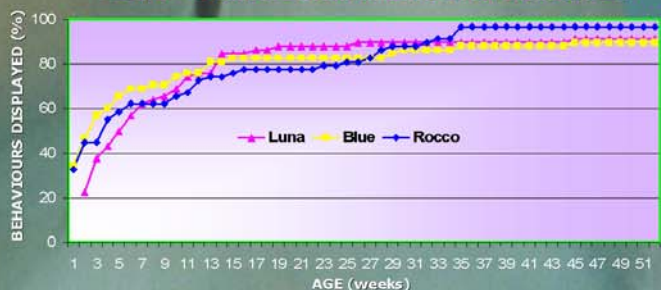


FIG 2: As for the display quality, from the first weeks all infants start to perform not only displays concerning survivorship, such as correctly swimming and suckling, but even aerial, bubble and sexual behaviours. On the other hand, for some specifically aggressive activities (e.g. "direct open mouth" or "rostrum hit") the 8th-9th month of age must be achieved.

FIG. 2 – FIRST APPEARANCE OF THE BEHAVIOURAL UNITS

	MEAN WEEK	SD		MEAN WEEK	SD		MEAN WEEK	SD
DIRECTIONAL SWIM	1,0	0	NIBBLING	2,3	1,5	DORSAL ARCH	10,3	11,2
BELLY UP SWIM	1,0	0	REST	2,7	1,2	BUBBLE CONTACT	10,3	4,7
SIDE SWIM	1,0	0	ROLL	2,7	1,5	BITE	11,0	4,0
APPROACH	1,0	0	LEAP	2,7	1,5	STOP	11,3	5,5
LEAVE	1,0	0	PECTORAL JERK	3,3	2,3	FLEXION	12,0	13,9
QUASE-LEAP	1,0	0	LOOP	3,3	1,5	MATE ATTEMPT	12,0	displayed only by the male
CONTACT	1,0	0	TAIL SLAP	3,7	2,9	TANK RUB	13,0	11,5
BUMPING	1,0	0	EXPLORATORY BEHAV.	4,0	2,0	PUSH	14,5	2,1
SUCKLING ATTEMPTS	1,0	0	LIE	4,3	1,5	VENTRAL ARCH	14,7	15,5
SUCKLING	1,0	0	DORSAL SLAP	5,0	1,0	BODY SLAM	16,3	11,0
TOURING	1,0	0	BUBBLE INTEREST	5,0	3,5	BUBBLE RING	16,3	11,7
BUBBLE STREAM	1,0	0	PECTORAL FIN SLAP	6,0	displayed only by the male	PLAY WATER	16,3	10,1
RUBBING	1,7	1,2	CHASE	6,0	1,7	PLAY OBJECT	19,3	13,7
BEAK-GENITAL PROP.	1,7	1,2	VERTICAL STAND	6,3	3,5	FLUKE OUT	20,7	21,4
GENITAL RUB	1,7	1,2	SOMERSAULT	7,7	5,0	SQUEEZE	23,0	5,7
BURBLES	1,7	1,2	TAIL HIT	8,0	7,9	DIRECT OPEN MOUTH	23,8	5,2
OPEN & CLOSE MOUTH	2,0	1,0	SIDE SLAP	8,3	3,8	ROSTRUM HIT	40,0	7,1
BONDING	2,0	1,7	SPY HOP	8,7	5,0	JAW CLAP	>52	never displayed
SWIM RANDOM	2,3	1,5	VENTRAL SLAP	8,3	4,7	BELLY PRESENTATION	>52	never displayed

CONCLUSIONS

The investigation of infant behavioural repertoire expansion appeared to be particularly interesting not only for witnessing gradual development of the calf, but also because some of the first life phase modules could consist of adaptations required to satisfy the typical age need or in phylogenetical rudiments fated to disappear with growth.

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