

DOLPHINS IN CAPTIVITY: REALITIES AND PERSPECTIVES

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In the present note, we give information about the Black Sea dolphins living in the Dolphinarium from Constanța. We present our experience of working with dolphins in a small dolphinarium, during a long period. We notice the reason of their short lifetime and we are trying to find explanations. We present some solutions to improve the life conditions for dolphins in our institute.

Introduction

The passage from the sea life in captivity is a very difficult experience for dolphins that are living in very large surfaces, without borders. First, the animal is isolated from his familiar group and his communication system became useless. Secondly, the dolphin must go from an infinity home to a small and close pool. He must learn to live between borders and reference points. On the other hand, the dolphin is a predator fish eater; in a dolphinarium, the animals receive pieces of fish from the man’s hand. The dolphins use to play long time of each day in the open sea, but in dolphinarium these animals must learn to play on the rules, with new signals and a fixed table.

At the beginning of ’70th years, in Constanța was open the first dolphinarium from the Black Sea coast. It is a small dolphinarium and, during the years, there were present all three pontic species of dolphins: *Phocaena phocaena*, *Delphinus delphis* and *Tursiops truncatus*.

The most common reasons of the captive dolphins’ death are:

- the diseases (dermal infections, internal haemorrhages, internal general infection, cardiac diseases),
- incidental events (intestinal occlusions through swallowing of different objects),
- the under nourishment (through rejecting of food or the dolphin cannot eat because another dolphin hinders him to take the food),
- the suicide (the dolphin refuses the food or strikes himself against the pool’s walls till it dies).

The most frequent death’s reason recorded in our dolphinarium is the dolphins’ incapacity to live in captivity conditions – the animals refuse the food or strike them on

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the pools' walls till (especially, for the species *Delphinus delphis* and *Tursiops truncatus*) they die.

Materials and methods

Our studies began in 1986 and include observations in the Constanța Dolphinarium, marine trips in the Romanian waters of the Black Sea and chemistry analyses on the dolphins dead – in our dolphinarium or failed on the Romanian beach of the Black Sea.

Results and discussions

In open sea, the Black Sea dolphins' lifetime is about 30 – 40 years for *Tursiops truncatus*, 20 – 30 years for *Delphinus delphis* and 9 – 14 years for *Phocaena phocaena*. In optimal conditions of captivity, the dolphins have a lifetime around the same values. In the great marinelands, the average lifetime of *Tursiops truncatus* is of 17.5 years, but there are examples of 40 years old bottle-nosed dolphins.

In the Dolphinarium from Constanța, we had recorded the next captivity lifetimes' values:

- *Phocaena phocaena* – average lifetime = 6 months; the greatest longevity was of 14 months;
- *Delphinus delphis* – average lifetime = 5.5 years; the greatest longevity was of 14 years of captivity;
- *Tursiops truncatus* – average lifetime = 5 years; the most longevity exemplar is still living after 17 years of captivity and we estimate that he is about 24 years old (when he was captured, in 1986, we established that he was an adult male about 7 years old).

From these information, we notice two different aspects. First, in the Dolphinarium from Constanța, the average lifetime is very short. Despite the fact that, normally, the bottle-nosed dolphin (*Tursiops truncatus*) is the most tolerant species in captivity conditions, in our dolphinarium, he lived no more than the common dolphin (*Delphinus delphis*). We try to find explanations for these facts.

Between the positive factors of the captivity life, we mention: the prophylactic treatments for some diseases, the vitamins administration and the nourishment on a fixed table. One of the greatest problems for the dolphins' accommodation and surviving in captivity conditions is the adaptation to a new food regime and to accept a new way to nourish. The free dolphins are predators and are eating only living fishes. In captivity conditions, the dolphins receive pieces of fish from the man's hand.

In the Dolphinarium from Constanța, the food is equally shared in five rations/day during the winter, respectively, eight rations/day during the summer. The dolphins are receiving these rations in the morning, on lunch and dinner, but also during the shows like rewards. We are using frozen fish (*Trachurus mediterraneus*, *Merluccius sp.*, *Clupea harengus*, *Scomber scombrus* and, circumstantially, we used, with good

results, species as *Sardina pilchardus*, *Alosa caspia normanni*. All the dolphins receive additionally vitamins everyday, after a schedule established by a veterinary doctor.

From the negative factors identified in the Dolphinarium from Constanța, we have noticed three principal factors: the pools' surfaces, the water's quality and the dolphins' isolation.

The pools using for dolphins have the next sizes:

- the summer pool is about 20 m length, 12 m large, 4.5 m depth and a volume about 1200 m³ water; is using during the warm period of year for the dolphins' shows and for the instruction process;
- the wintering pool (there is a relating channel with the summer pool) is about 10 m length, 6 m large, 2.5 m depth and a volume about 180 m³ water; it is used for the animals' wintering, but also for the quarantine periods;
- the covered pool is about 21 m length, 8 m large, 3 m depth and a volume about 500 m³ water; it is used for dolphins' shows during the whole year, but also for the wintering and instruction process of animals.

If we consider the pontic dolphins' biology and their sizes, it is obvious that, no one of the pools has optimal sizes for the dolphins' captivity life, especially for the large dolphins. The wintering pool's volume and sizes are not enough to shelter a dolphin for a long time. However, in this pool, the oldest dolphin from our dolphinarium, a male of *Tursiops truncatus*, has been wintering every year beginning from 1998. The covered pool has optimal conditions only for one dolphin. The summer pool is good for two exemplars of *Delphinus delphis* or *Tursiops truncatus*, but for the last species is very close to the optimal limit that could explain the greatest longevity of the common dolphin compared to the bottle-nosed dolphin.

Some objective factors or economical reasons require the dolphins' isolation. For long time, in our dolphinarium was present only one dolphin. Sometimes, when we had two dolphins, we separated them because one of the animals was too aggressive or because, during the summer, we had to give two shows for public. On the other part, the pools' sizes require a limited number of dolphins because the super-population is a negative factor for these territorial animals.

The dolphins' isolation is a very strong stress – factor for these social animals. The most frequent reaction of the isolated dolphins is the hyper-excitability, in different forms of display. The animal can have an uncontrolled swimming and put it in dangerous conditions. Sometimes he strikes violently the pools' borders it seems to lose the limits of its territory, so, the dolphins die breaking their head or spinal column. Other times, the animal can refuse to participate in the show and perform very dangerous jumps in order to nervously unloading. The very long isolation of dolphins brings out the appearance of apathy and total indifference when the animal hiding under the nourishment bridge, refusing the food. Frequently, especially in the situation of longevive and alone captivity dolphins, appear the very bad nervous conditions, when the dolphins strike them to different objects, jumping out very high, beating violently the

water. This kind of behaviour was displayed usually by the oldest bottle-nosed from the dolphinarium „Constanța” even the human beings were present on the pool’s border.

The water’s quality is good only for a short period in our dolphinarium. Despite there exist a filterable system, the water’s treatment uses solution of NaCl. Our observations point out that the excessive using of this kind of treatment encourages the appearance of allergies, excessively drying of skin and the lesions which increase the dermatose risk. We are thinking that using the CuSO_4 and the artificial increasing of the pool waters’ salinity could allow a good quality of water and improve the life conditions for dolphins.

Ideally, it could be to have an emergency pool to keep there the sick dolphins during the treatment period. In this way, we reduce the risk for the other animals, but also the cost of the water NaCl treatment and of the water filtering to remove the excess of chlor.

To decrease the risk of incidental death, it is necessary to achieve the maintenance works when the dolphins are not in the pool. In addition, the strange objects must be removed immediately from the pools to avoid the possibility that dolphin catch and swallow them. Not in the end, we must warn the public about the fact that the presence of small objects in pools represent a very great danger for dolphins’ life. In the dolphins’ instruction process, we must use very precise and correct signals in order to avoid the bewilderment of animal. Every time when we give a nourish signal, we must offer a piece of fish to dolphin – if not, the dolphin has the stress of „cheat” (he does not receive the reward for a good reaction). The disconcerted animals can swallow strange and dangerous objects.

In some situations, the human attitude was the probable cause of the dolphins’ death. For example, after 1993, the first signs of conflict appeared between two males of *Tursiops truncatus* that were living in our dolphinarium from 1986. Our specialists captured many bottle-nosed dolphins from the Black Sea’s Romanian waters before 1996, but only one exemplar survived for five months. Usually, the dolphins died after few hours or days of captivity. Two or three of them died because the large publicity by mass media turns these moments into great local events. The horn’s nose of the cars drive by enthusiast but not informed drivers, in addition with the presence of a large public along the road from the sea’ shore and on the territory of the dolphinarium were important stress – factors for the dolphin astonished by the capture’s moment. The same kind of publicity could contribute to the death of dolphins immediately after birth, through the human excitement presence close to pool. Not in the end, the all shows’ participation of the females during the pregnancy period had surely a negative impact on the birth moment and on the viability of small dolphins.

Our observations and the information from the dolphinarium’s archive permit us an hypothesis on the dolphins’ accommodation in captivity. The ill dolphins and the pregnant females of dolphins seem to accept more easily the captivity status than the healthy animals. Maybe, this response of the first animals is a positive answer of the

dolphins to the improvement of their health status under the cares, attention and the treatment given by man in dolphinarium.

During the last years, in the Dolphinarium from Constanța a bottle-nosed dolphin female (*Tursiops truncatus*) gave two births and two miscarriages. We do not know if it exists a real correlation but we must notice that the birth were the result of the July mating period then the pregnancy began after the autumn mating period (September - October) finished with miscarriages. The first complete pregnancy (25.07.2000) took off with one died dolphin (hanged with the umbilical girdle). The second birth (21.05.2002) was the longest recorded in our dolphinarium – twelve hours, so the little dolphins died during the birth.

Of course, our lack of experience in the dolphins birth' situations was another negative factor for the viability of the little dolphins. We are thinking that the birth of viable dolphins in the Dolphinarium from Constanța could be possible if:

1. the female's pregnancy status is identified before the birth moment. Our experience permits us to notice that the partner male of the female has a protective behaviour and performs the shows' numbers refused by female. In this situation, a rigorous medical control could permit us to identify earlier the pregnancy status and to take protection measures for pregnant female;
2. during the pregnancy period, the administration of different treatments protect them about the impact on the embryon's development (in January 2001, the pregnant female received antibiotics);
3. during the pregnancy period, the shows' participations of the female is reduced;
4. we are improving the captivity conditions – the water's quality, the food's quality and quantity –for the pregnant females.

Every change in the captivity dolphins' daily life has a negative impact on their behaviour and psychology, even the animals have lived for many years in captivity. After 17 years of captivity, our longest bottle-nosed male (*Tursiops truncatus*) needs three – four days of accommodation each time when he must change the pool (for wintering or for summer period). For this reason, maybe it is more correct to speak about the dolphins' habitual and no accommodation to the captivity life.

The life in a dolphinarium – even an ideal one – is just a captivity life for a dolphin; this means the breaking out of all his experience before the captures' moment, the change of all or nearly all his knowledge and his daily life in the open sea, with his familiar group. It is obvious, the dolphins' surviving in captivity depends on us - the man that takes them out of sea and brings them in our world. We must increase the level of our knowledge about the cetaceans' biology, ecology and ethology, about their necessities, but also to follow their health status and the qualities of the captivity conditions. For this reason, the human personal who works with dolphins must improve their experience and must decrease the impact of captivity stress factors to their minimum limits.

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