

Adoption behaviour in the bottlenose dolphin

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A case study of an orphaned offspring, which lost its mother three days after birth. The baby was first adopted spontaneously by a pregnant female who, after delivery, rejected the orphan to take care of her own baby. A second adoption-behaviour was 'shaped' to a female with a 15 month old calf. It took 2 days before this adoption succeeded. An instructive story with a sad end: the baby died after a struggle for life of 12 days, and three different 'mothers'.

Situation just before the births of 1987

3 December 1986

We suspected one female to be pregnant, this was confirmed by ultrasound. We checked all females but could confirm only one.

23 March 1987

Another routine ultrasound revealed a second pregnant female.

April 1987

We decided to separate males and females in April. As we did in 1986, again we stopped all the usual show-behaviours and gave the visitors every half hour a more educational directed presentation with breeding as its main theme.

Again, our main-pool was changed into a breeding-pool.

This system worked out successfully in the previous year.

All four of our females stayed in the breeding pool:

Iris: A 17 year old female who had a successful birth the previous year: she was still nursing Nicky who was then just over one year old.

Pat: again pregnant after the loss of her first offspring in 1986.

Ina: A 20 year old female, also pregnant, who had a previous birth in our pool in 1982, 11 months after arrival: that baby survived 10 days.

Dolly: A 16 year old female, who was never present at previous births. We thought she could perhaps learn how to behave during delivery and nursing. This could help her a lot in the future, if ever she became pregnant.

As a result: 4 females and a breeding male in a 600 m³ pool.

May 1987

We started last year an investigation about behavioural changes in a pregnant female in the Bottlenose Dolphin. So, again, we observed the pregnant animals every day between 18.00 pm and 20.00 pm and recorded everything on videotape.

These results could be the basis for another paper in the future.

27 July 1987

12.35 pm: Ina stops all food intake at 11:30 h.

28 July 1987

12:35 pm: Ina has contractions: the birth takes 1.5 h. Odin is born! He swims towards the surface and breathes for the first time. During the birth we also observe a rather important haemorrhage.

Ina takes very good care of Odin, she always puts herself in between the pool walls and her offspring.

The other animals are quite nervous: due to the birth the colour of the water was changed and the event itself made them swim around in a tight group at high speed.

21.18 pm: The baby is searching to suckle. Ina teaches Odin the right place by pushing her snout against the belly of Odin.

29 July 1987

04.06 pm: First successful suckling; he suckles a few times. In the afternoon we think that the other animals are disturbing the suckling period of the baby and decide to give all of them as much food as possible to create a restful atmosphere. After a while this seems to work: all the animals are swimming around very quietly and as a result we observe frequent suckling.

21.00 pm: Every time Odin comes near the nipples, Ina turns away from him.

23.00 pm: A lot of unsuccessful attempts at suckling. He pushes constantly against her belly, but she refuses to turn her belly towards him.

30 July 1987

Breathing rhythm of Odin 7 × per three minutes. During the whole morning he tried several times to suckle, without any success; Ina gets nervous and swims faster. In the afternoon after different trials

Odin releases air bubbles and whistles very loudly; she still refuses all cooperation.

31 July 1987

During the night several attempts occurred without success: Odin swims now very often under his mother. Ina is not helping.

In the morning more and more attempts are observed without success; every half hour we observe a new attempt. Odin tries until he is too tired to dive.

11.25 am: Ina's tongue reaches completely out of her mouth. She swims around very nervously. We assume that she has a pain in the vaginal region and we will try to give her a pain killer.

13.30 pm: Another series of attempts by Odin.

15.30 pm: Ina starts to swim in a V-shaped manner.

16.00 pm: Odin whistles a lot; Ina pushes her tail upwards very strongly and swims around with an open mouth.

16.45 pm: Ina gets her medication.

17.10 pm: Ina pushes her tail upwards very strongly.

19.30 pm: Odin still tries to suckle, Ina swims very fast now.

20.10 pm: Odin has difficulties to follow his mother swimming at high speed.

20.20 pm: Ina makes short, sharp bends with her entire body and pushes out her tongue nine times.

21.15 pm: Ina looks calm now.

21.20 pm: Ina hangs down with her head against the pool bottom and gives a very apathetic impression. Odin breathes at different times alone and loses contact with his mother. At first she reacts very strongly but then she drops back in an apathetic behaviour.

21.50 pm: Ina is not reacting when Odin swims away: Odin whistles a lot and then suddenly Pat takes over the baby and swims away with him.

22.10 pm: Ina is now in a very bad condition: she is motionless and is almost drowning. We have to support her and decide to transfer her to a treatment-pool. This treatment pool is equipped with a movable bottom. Once Ina is on this platform, out of the water, we observe that:

- Ina has severe shocks throughout her body
- a very high heart rate
- she has a very unstable swimming pattern both in direction and equilibration
- she clearly shows breathing difficulties
- muscle contractions are spread over her whole body.

1 August 1987

02.10 am: Sudden difficult breathing and Ina dies. The autopsy reveals an acute uterine infection and probably the pathological complications arising from this caused the death.

During the night: Odin suckles without any problem; Pat reacts as a normal dam and turns on her side each time Odin wants to suckle. We try to find more information about similar situations, but in vain. We contacted Dr Sweeney who told us that Pat probably could produce milk because she was near term and would very soon give birth herself.

Pat continues to take care of the baby the whole day and night.

Meanwhile we prepare everything for an eventual forced-feeding operation if ever Pat would give birth and reject the adopted baby.

2 August 1987

09.00 am: Pat has contractions but is still taking care of Odin.

09.30 am: The whole tail of the baby is visible to us but Pat still takes care of Odin.

10.00 am: Pat delivers a female, Orfee, is in no panic at all, goes straight for her own baby and rejects Odin.

10.30 am: Pat takes good care of her baby, she always is positioning herself in between Orfee and the pool walls. Odin, our orphan, is swimming around in circles, whistles a lot and is trying to make contact with every dolphin in the pool. They always swim away or give a firm tailslap.

20.30 pm: Odin is trying to swim together with Iris and is beaten off. He had his last food-intake this morning at 5.00 am!

3 August 1987

Odin swam in circles the whole night, but was reasonably calm: he did not once hit a pool wall!

Several questions emerged:

—Should we take Odin out of the pool and start to artificially feed him? We knew that no one ever succeeded in this kind of operation!

—Should we leave him in the pool? There was always a small chance that if ever Orfee should not survive the first days, Pat could readopt Odin!?

—Then a new idea grew: could we not try to 'shape' an adoption behaviour towards Iris?

10.30 am: Orfee suckles very regularly, apparently without any problems.

11.00 am: We decided to give our idea a try: Someone had to keep Nicky, Iris' baby of 15 months, occupied. Meanwhile another trainer started to 'shape' Iris to fetch 'something'. As she already knew what 'fetch' something was, we threw different objects in the pool that she brought back to us without any problem. Then we gave the same 'command' in the direction of Odin, who was still swimming in circles. At first she looked around to find the 'object', swam around a few times and came back. Again we gave the cue and she went towards Odin, swam around him, (he followed immediately), and brought the

'object' towards us. We rewarded her strongly and started again and again. She started swimming along the pool sides, following us with one eye, allowing meanwhile that the baby swam next to her side. After a while she swam around during 5 minutes before a reward came. We had also a lot of problems keeping Nicky away from his mother: to succeed this we used all possible objects to keep him busy. We used fish; balls; a lighter switched on and off; a torch also switched on and off; a rope; or just played 'hide and seek'; (in our pool one side of the pool has a window which allows us to see the animals along the length of the entire pool—Nicky just loves to follow whoever does get his attention!).

16.00 pm: Iris swims together with Odin, making the attempt to suckle.

16.14 pm: The first successful suckling! Iris was very excited: her eyes were spread wide open! Nicky showed a very jealous behaviour: he swam right towards his mother and positioned himself in between Odin and Iris. We just jumped with joy; there was a slight possibility of success.

17.00 pm: The whole group swims around together and Odin is trying to follow, although with some problems.

18.00 pm: Odin has succeeded to swim next to Iris; Nicky swims on the other side. This provokes sometimes short disturbances and Odin gets a few tail-slaps.

18.05 pm: Odin suckles while Nicky is playing.

21.30 pm: Another successful suckling: 4 times in a row.

22.00 pm: All the lights above the pool were dimmed: we heard a lot of whistling from different animals and decided to switch on 50% of the lights, so that we could again observe the animals under better conditions.

During the night Odin spends most of the time on his own: if he approached Iris, she pushed him away or gave him a tailslap. Sometimes he was allowed to swim with the group for short periods. Twice, during a resting period, he touched one of the windows with his head. Several times he whistled and the other animals reacted by giving a soft tailslap or a jawclap in his direction. He seemed to undertand and started to swim around quite fast in large circles, apparently without further sounds.

4 August 1987

During the night the only activity observed, was Orfee suckling very regularly.

In the early morning Iris started swimming together with Odin and allowed him to suckle several times; Iris nuzzled Odin all over his body on two occasions. The same behaviour is observed all day.

This goes on and on: Odin gets more and more attention from Iris, who allows him to swim with her for longer periods, up to 8 minutes.

19.30 pm: Something remarkable; when Odin had his suckling-period, Nicky just waited until Odin was released, returned to his mother and suckled too!

This also was the last suckling for Odin for the day: Iris did not want to swim together with him any more and preferred to stay together with Nicky.

Orfee, the other baby, suckles about 40 times during a night.

5 August 1987

07.25 am: Odin again draws the attention of Iris and has his first suckling. In less than one hour he suckles 40 times! We could see his stomach swollen from the amount of milk he took! Then a series of suckling-periods started: we compared the number of sucklings from the two babies during the 24 hours that followed:

Odin	Orfee
189 times	132 times

This also gives an idea about Odin's physical state: he had lost so much weight the previous days that he was only skin and bones.

We were afraid that his resistance would be very weak too and refused all visitors to enter the building to eliminate all possible contamination.

As a direct result we could see Iris' food-intake doubled over 24 hours. Nicky also suckled at least 7 or 8 times!

Nicky displayed jealous behaviour several times; he had less attention from Iris and started a lot of fights with the other animals. He also hit the glass windows several times with his tail, displayed some jawclapping and a lot of breaches. Nicky's food-intake increased by one-third.

This is the first night Odin did not have to swim alone: Iris took care of him and allowed him to rest a lot. Nicky swam most of the night together with Dolly, another female.

Although Odin is allowed to swim with Iris, he is not getting all the rest he needs: he is so used to trying to get some food, he got the bad habit to swim underneath his 'mothers'. This habit prevented him from benefitting from the slipstream of the dam.

6 August 1987

A new behaviour occurred: Iris stayed together with Odin during the first feeding at 7 am.

During the early morning, Iris found a solution to change Odin's position. She started to swim closer to the pool bottom; this obliged Odin to swim next to her and finally next to her dorsal fin. She had to repeat this several times before he understood this position gave him the opportunity to rest more easily.

Iris swims together with Odin; sometimes with Nicky and sometimes with both. If one of the two is suckling, the other has to keep away or gets a tailslap.

In the late afternoon Iris and Nicky show mutual aggression; Nicky gets bitten, some tailslaps and later he is not allowed any more to swim with her. He is rejected! So now we are facing a new problem: can a subadult male of 15 months survive without his mother? We were really afraid of the coming hours!

During that night, Nicky was mainly swimming together with Dolly; Iris with Odin and Pat with Orfee

7 August 1987

Basically the same formation was maintained in the morning.

09.30 am: Nicky displayed a certain call, Iris left Odin almost immediately, swam towards Nicky, swam together with him and came back to Odin, who started to swim on her other side. This happened several times during the day.

During feeding time she is not leaving Odin at all! We assumed the adoption was successful. We could see that Odin's physical condition seemed to improve; he is suckling a lot.

Nicky gave us more problems that day: he refused food during two feeding-times. The last feeding however he did eat a lot! During this night Odin was constantly together with Iris and he was allowed to suckle whenever he felt too.

Odin	Orfee
111 sucklings	42 sucklings (measured over 20 hours)

8 August 1987

The whole day there were no direct disturbances or unusual events. We were simply admiring the fantastic underwater view: two baby dolphins and their mothers, one 15 month juvenile and another adult female in one formation! This view gave us the reward of so many hours of observing, stress and sleepless nights. Nicky seemed to have found in Dolly a very good comrade to play with. His food-intake improved by one-third and he was apparently accepting the new situation.

That day everybody left work with a clear conscience: things were turning out right.

During that night two observers were present, like all previous nights, and noted every move of the animals.

9 August 1987

No unusual events were noted except that Odin was swimming very tight to Iris, starting around 05.00 am.

08.00 am: Iris and Odin are still swimming very tight, Odin moved his tail slightly; he was always in the slipstream of the dam.

08.30 am: Odin has difficulties in taking breaths.

09.00 am: Again breathing problems, Iris feels that something goes wrong; she whistles a lot and her eyes are wide open.

09.30 am: Odin dies. Iris tries to bring him to the surface several times; gives up after 5 minutes and starts swimming with Nicky. She only came back to see how we were taking Odin out of the pool. The autopsy showed a severe infection of the upper respiratory tract, which caused his death.

Meanwhile life goes on; Pat and Orfee seemed to do well, Iris and Nicky stayed together all day long.

16.00 pm: Orfee shows the same behaviour as Odin: she swims very tight to Pat.

19.00 pm: Everything looks calm; Pat and Orfee were swimming around in very large circles; the others, Iris, Nicky and Dolly in a second group.

During this night, someone came looking every hour and noted the situation of the group. Nothing abnormal was noted.

10 August 1987

02.00 am: The nightwatch found Orfee dead on the pool bottom. The autopsy showed a malformation of the heart; a small perforation of the septum atriorum (the thin separation between the upper left and right heart chambers).

For the whole crew, this meant the end of a dream almost realized! By this way I thank them for the team spirit that showed so much in this difficult period.

Summary

1. One can try to create an 'ideal' situation to breed dolphins, give up everything else for that purpose; but one still has to have that little bit of luck.
2. There is a fair chance to shape an adoption-behaviour in *Tursiops truncatus* and probably in other species if the right conditions are present.
3. A 15 month old juvenile can survive without the support of his mother if it is accepted by the pod-members and if it eats enough solid food.

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