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Translocation of live-stranded newborn St. Lawrence Estuary belugas (*Delphinapterus leucas*) for adoption by nearby females: A review of past responses, and assessment of feasibility and risks

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Foreword

This series documents the scientific basis for the evaluation of aquatic resources and ecosystems in Canada. As such, it addresses the issues of the day in the time frames required and the documents it contains are not intended as definitive statements on the subjects addressed but rather as progress reports on ongoing investigations.

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ABSTRACT

Over the 35 years of the SLE beluga carcass recovery program (1983–2017), 97 neonates were reported stranded, of which 13 were found alive. In all cases, the calves were estimated to be a few days or weeks old. Responses varied from letting nature follow its course to transportation to aquariums for rehabilitation to euthanasia. In three cases, the stranded calves were transported and relocated into nearby herds of female and young belugas, in the hope they would be reunited with their mother or they would be adopted. While all three calves survived their translocations, post-release visual tracking did not exceed 8 hours, preventing the fate of the calves to be determined. A review of the literature on adoption in odontocetes in the wild and odontocetes under human care indicates that, as with other taxa, adoption is possible but appears to be uncommon. While adoption of an unweaned odontocete calf has been observed in the wild, none involved newborn calves, i.e., animals in their first year of life. Successful adoption of newborn odontocete calves under human care has so far only occurred with non-pregnant and non-lactating females following induced lactation. In these cases, calves were temporarily fed via a tube until the fostering female's milk was rich enough. In the wild, an abandoned newborn calf will have died before a non-pregnant and non-lactating adopter can start producing milk. The only chance for a translocated live-stranded newborn calf to survive would be for the animal to be adopted by a female that has lost her calf. The number of females in that situation and in good enough condition to proceed with lactation following the loss of their calf, is likely to be limited.

INTRODUCTION

The St. Lawrence Estuary (SLE) belugas (*Delphinapterus leucas*) are isolated from the closest neighbouring populations (Brennin et al. 1997; Brown Gladden et al. 1999). Their population was considered stable or slowly increasing since the late 1980s but has been declining at an estimated rate of 1.13% per year since the early 2000s (Mosnier et al. 2015). The abrupt increase in newborn mortality observed since 2008 (Lesage et al. 2014) and the apparent increase in the mortality of females with parturition-associated complications observed since 2010 (Lair et al. 2016) could be precipitating the decline. Now estimated at less than 900 individuals, SLE belugas are listed as “endangered” under Canada’s Species at Risk Act (COSEWIC 2014).

Through the beluga carcass recovery program maintained by Fisheries and Oceans Canada (DFO) with partners of the Quebec Marine Mammal Emergency Response Network (QMMERN)[1], 97 neonates have been reported stranded since 1983, of which 13 were found stranded alive on the shores of the SLE, including six prior to 2008 (0.25/yr) and seven between 2008 and 2017 (0.7/yr). Earlier responses to these events have varied from transport to aquaria for rescue and rehabilitation, to letting nature follow its course. Responses also included pushing the animal back in to the water and transport to a facility without additional care or for euthanasia. Since 2008, three of the live-stranded newborns were transported, and relocated near herds of mature adults with young, assumed to be females, hoping they would find their mother or would eventually be adopted. DNA samples were collected from each released newborn for future cross-reference. To date, their fate remains unknown.

Human intervention to assist marine mammals in distress is a relatively recent endeavour (Wiley et al. 2001). It has rapidly evolved from beach management programs to well-funded response programs in several regions of the world. The motivations and decisions to respond to marine mammals in difficulty has so far largely relied on individual and institutional philosophies rooted in animal welfare, conservation, research, education and/or cultural considerations (Moore et al. 2007). Response to live-stranded cetaceans raises a series of obvious logistical, medical, as well as ethical challenges and issues (Moore et al. 2007). Whenever a response includes rescue for release, it also raises concerns for conservation such as the transmission of infectious diseases, the introduction of exotic pathogens, or the reintroduction of “bad genes” in the recipient population (Wilkinson and Worthy 1999; Measures 2004; Quakenbush et al. 2009; IUCN/SSC 2013). Considerable efforts continue to be undertaken to review the different approaches, evaluate their successes, and apply risks and benefits analyses to develop proper response guidelines (Zagzebsky et al. 2006; Moore et al. 2007; Whaley and Borkowski 2009; Sampson et al. 2012; DFO 2018).

Currently, rescued and rehabilitated, nutritionally and socially dependent, odontocete calves are considered non-releasable in the U.S.A. (Whaley and Borkowski 2009) and in Canada (DFO 2018). This leaves the relocation of live-stranded SLE newborn belugas near female herds, without prior rehabilitation in remote facilities, as the sole option with a direct potentially positive demographic contribution to the population recovery.

As such, these relocations could align with the reinforcement activities included in the IUCN conservation translocation guidelines (IUCN/SSC 2013). Reinforcement measures are defined

[1] QMMERN is composed of 15 governmental and non-governmental organizations, including representatives from DFO management, Conservation and Protection, and Science branch.

as the intentional movement and release of an organism into an existing population. It aims to enhance population viability by increasing population size or by increasing the representation of specific demographic groups or stages.

In this paper, we review past responses to live-stranded SLE newborn belugas and evaluate, through a literature review, the feasibility of translocation and likelihood of adoption of orphan newborn odontocetes. We also address risk in terms of animal welfare, disease and pathogen transfers, cost on the adoptive mothers and financial costs of translocation. This responds in part to question #2,3, and 4 of the request for advice from the Species at Risk Act (SARA) directorate:

1. Is attempting to rehabilitate or relocate a live-stranded newborn beluga or juvenile likely to contribute to the recovery of the SLE beluga population?
2. What are the chances of survival of a stranded newborn beluga calf, and how should we assess the health status of newborn belugas?
3. In the case of a live-stranded SLE beluga, what factors should be considered in the decision to rehabilitate, relocate, or leave the animal where it is? What practical steps should be undertaken to minimize animal welfare concerns?
4. In the event that a stranded animal is relocated, what scientific information should be collected during the relocation?

The first question is addressed in a separate paper from Hammill and Lesage (2018).

REVIEW OF PAST RESPONSES

Over the 35 years of the SLE beluga carcass recovery program (1983–2017), 97 neonates were reported stranded of which 13 were found alive. This is likely an underrepresentation of the number alive when first found as some witness accounts mentioned signs of persistent breathing or movement when calves were found. However, only the cases in which the animals were still alive when a trained volunteer or a member of one of the intervention teams arrived on site were treated as live-strandings. In all cases, the calves were estimated to be a few days or weeks old. A brief account of the different responses to these cases is presented in the following section with a summary of the interventions and outcomes in Annex 1.

The first two live-stranded newborns were transported to aquaria in Quebec and Montreal for rehabilitation. Both died respectively within 10 days and 3 days. Following these cases, three other newborn calves were transported to nearby DFO facilities where they died without additional care or were euthanized. A fourth calf was pushed back in the water by a witness and later re-stranded and died. This last intervention was not supervised by a member of QMMERN.

In early August 2008, at the onset of an unusual mortality event linked to a toxic dinoflagellate bloom during which 10 beluga carcasses were found (Starr et al. 2017), a newborn stranded alive near Tadoussac. The animal appeared vigorous. After a quick consultation with QMMERN partners, it was decided to transport the calf to Tadoussac, where it was put in an inflatable boat filled with water for the night. The animal was relocated the next morning in a herd of adults (presumed to be females) with juveniles. The animal was not given any treatment. It was successfully released approximately 12 hours after being found on the beach. Before the release, standard measurements were made, and a piece of skin around the umbilical cord was taken for future DNA cross-referencing with biopsied and dead belugas.

After its release, the calf was tracked visually from a small 8 m boat without interruption for over 8 hours. Immediately after its release, it was joined by a group of adults assumed to be males that stayed with it for approximately an hour before leaving it alone. Two other groups of adults, likely also males, joined it and followed the same pattern before a female with a calf estimated from its size to be 2–3 year-old joined the relocated calf. The female was seen swimming close to the newborn for less than an hour before we lost track of them.

Following this first experience, the partners of the QMMERN agreed to reattempt translocations into female herds for potential adoption if stranded newborn calves were deemed to be in good enough condition to withstand the translocation (RQUMM 2013).

Between 2012 and 2015, 4 other newborns stranded alive. One was transported to a veterinarian facility for euthanasia, one was pushed back in the water by a witness but later re-stranded and died, and the two others were left alone.

Two other translocations were attempted in 2016. The calves were transported by truck to the nearest marina, loaded on a small 8 m boat and released in a herd of females and young within 6 and 8 hours, respectively, from their discovery. The calves were not given any treatment. Standard measurements and a piece of skin were taken from the umbilical of the first one and a small biopsy was taken on the second calf. In both cases, the post-release tracking ceased after less than one hour. The fate of the three relocated newborn calves remains unknown.

FEASABILITY OF ADOPTION

Adoption is a form of alloparenting in which the primary caregiver of a dependent young shifts from the genetic parents to another individual that may or may not be related to the young (Thierry and Anderson 1986). Adoption has been recorded in over 150 avian species and 120 mammalian species, including odontocetes (Riedman 1982). Potential explanations for this behaviour include: increased inclusive fitness, parental experience, and reciprocal altruism but it is sometimes considered as a non-adaptive "reproductive error" (Reidman 1982; Boesch et al. 2010; Hobaiter et al. 2014).

Adoption and allonursing have been documented in belugas under human care (Leung et al. 2010; Winhall 2012). It is not known if adoption, especially adoption of a newborn calf, would be possible in a free-ranging group but it has never been reported. To evaluate the probability of adoption of a newborn beluga calf taking place in nature, cases of adoption in odontocetes, both under human care and in nature, are reviewed.

ADOPTION IN ODONTOCETES UNDER HUMAN CARE

Before delving into adoption events observed in captivity, it is relevant to review studies examining alloparental care and allonursing in animals under human care to assess the likelihood of adoption and the process by which it occurs.

Alloparental care (i.e., parenting non-offspring) is generally rare in belugas. In aquaria where the birthmother is present, it occurs on average only 2% of the time over the first year of life although it can increase to approximately 40% of the time after the first year (Hill and Campbell 2014). Furthermore, alloparental care isn’t uniformly distributed across individuals with some calves being a lot more prone to seeking care from foster mothers. In a study conducted on 5 calves over the first year of their lives, two of the five calves were involved in 97% of the allocare occurrences and one of the calves was never seen receiving allocare (Hill and Campbell 2014). Alloparental care events were significantly shorter than caring events from the birthmother, which suggests that these events did not replace the bond between mother and calf.

There are also several reports of allonursing (i.e., nursing non-offspring) in captive belugas in the presence of the birthmother. Spontaneous lactation from suckling can occur in nulliparous whales, and allonursing can represent up to 50% of the nursing events, and is done by both related and unrelated individuals (Leung et al. 2010).

Adoption cases in odontocetes under human care are scarce. There have been few accounts of dolphin calves (Kastelein et al. 1990; Smolders 1988; Gaspar et al. 2000; Ridgway et al. 1995) and one of a beluga calf (Winhall 2012) adoption in captivity. Some of the dolphin calves in these adoptions events came from the wild where they were found in poor condition (Gaspard et al. 2000; e.g., *Steno bredanesis* calf adopted by *Tursiops truncatus*); the other calves were born in captivity and had to be adopted due to the death of their birthmother (Ridgway et al. 1995; Smolders 1988) or inadequate maternal behaviour by the birthmother (Kastelein et al. 1990; Winhall 2012). In all the cases where adoptions were successful, the foster mother was not lactating nor pregnant. Four of the six cases studied, including the beluga calf, were successful, while two ended with the death of the calf. In one case, the foster mother had lost her calf eight days before and was still lactating when introduced to the foster calf. However, the calf died due to infection that resulted from cuts caused by rubbing against the wall of the tank when the foster mother was not caring for him (Kastelein et al. 1990). In the other unsuccessful case, the calf was first adopted by a female who was still pregnant. This allomother rejected the adopted calf when her own calf was born two days later. Subsequently, the training crew tried to force the adoption by driving the female's own calf away from its mother to another female who already had a 15-month-old calf (Smolders 1988). Initially this approach was successful, the foster mother took care of the newborn and nursed him, but then chased him away while slapping him with her tail. The next day, the newborn calf was taken back by the female and nursed for one last day before the calf died.

All of the successful adoptions, including the adoption of the beluga calf (Ridgway et al. 1995; Gaspar et al. 2000; Winhall 2012) follow a similar pattern: the calf was introduced to a female that was not pregnant and did not have a calf. In all the cases but one, the calves started suckling immediately after being introduced to the female. The female adopted the echelon position rapidly and helped the calf to swim. All the females started producing milk within a few weeks of the calves being introduced to them, although the milk produced initially was not very rich in fat. In the interim, the calves were fed milk via a tube by the trainers of the facility. Three of the four calves eventually fed solely on the milk produced by their foster mother and began to eat solid food when developmentally appropriate for the species. The other was never solely fed on the milk produced by its foster mother.

These cases show that adoption is indeed a possibility, at least in some species. The fact that all the successful cases followed a similar pattern suggests that non-lactating, non-pregnant allomothers are probably the most likely candidate to adopt. Although there is no evidence to discard the possibility of adoption by a mother that has lost its calf and is still nursing, the only case that was recorded in captivity showed signs of unwillingness from the allomother resulting in the death of the calf from the lack of maternal care and rough treatment.

These results have to be considered with caution when comparing the likelihood of adoption in the wild. In all the successful adoptions, calves were temporarily fed via a tube until the fostering female's milk was rich enough. If this were to occur in the wild, the calf would have died before it could be sustained by the female's milk. It must also be considered that alloparental care is to be more common in captivity than in the wild because its cost is offset by the ease of obtaining food in captivity (Packer et al. 1992).

ADOPTION IN ODONTOCETES IN THE WILD

In the wild, there have only been two reported cases of adoption by odontocetes with varying levels of success. In the first case, an Atlantic bottlenose dolphin female who had lost her calf

18 months earlier was seen with another calf which did not have fetal folds and was 75% her body mass, i.e., appeared to be < 1 yr of age, too big to be a newborn. The presumed birthmother of the calf was found dead on a beach a month before the adoptive mother was first sighted with the calf. Over the course of 22 months, the pair was seen 11 times and always with one another until the foster mother died. The calf was not seen after and is presumed dead (Howells et al. 2009).

In the other case, a two-month-old Indo-Pacific bottlenose dolphin calf was adopted by a nulliparous female. The calf was observed during multiple encounters in the suckling and infant position, and on at least one encounter milk was seen leaking from the mammary slit. After the adoption, the calf seemed thinner than when associated with its birthmother. The foster mother and calf were seen together on 18 occasions over the course of three months. After that period, the foster mother was seen regularly, but the calf was no longer observed and was assumed dead (Sakai et al. 2014).

These two cases suggest that an adoption of an unweaned calf in the wild is possible in some odontocetes although in both cases, adopted calves were several months old. The disappearance of the calf monitored by Sakai et al. (2014), however, questions the long-term success of such adoptions. The presumed death of this calf could be attributed to the inexperience of the adoptive mother or the absence of adequate nutrition over the first few weeks of the adoption. It has been shown that induced lactation can take anywhere between five days and two weeks in *Tursiops truncatus* (Gaspar et al. 2000; Ridgway et al. 1995). It is also not clear if a newborn calf could be fully supported by induced lactation given the low fat contents of the milk of these lactation induced females compared to the milk of recently parturient females (Ridgway et al. 1995).

ADOPTION AS A MEANS OF SAVING LIVE-STRANDED NEWBORN BELUGA CALVES

While adoption of newborn odontocete calves have not been observed in the wild, the cases described above indicate that adoption of newborn calves is possible in certain odontocetes, including belugas, under human care. However, as with other taxa adoption appears uncommon in odontocetes (Riedman 1982). The existing body of literature further suggests that adoptions are more likely to happen under certain conditions. Belugas produce and nurse only one calf at a time, making it highly unlikely for a mother to take on a second calf. In addition, odontocetes have been shown to give preference to their calves over adoptive ones (Smolders 1988), hence it is highly improbable that a female already having a calf of her own would adopt a lone calf.

There are only three situations in which a mature odontocete (in most recorded cases, *Tursiops truncatus*) has been seen adopting a dependent calf:

1. in captivity: a few days before parturition, a female can produce milk and might be receptive to adoption, although she will likely reject the foster calf when her own calf is born (Smolders 1988);
2. in captivity (successfully) and in nature (unsuccessfully) by a dry non-pregnant female during and after induced lactation (Ridgway et al. 1995; Gaspar et al. 2000; Winhall 2012; Sakai et al. 2014); and,
3. in nature (successfully for an older calf) and in captivity (unsuccessfully) by a lactating female that has lost her own calf (Howells et al. 2009; Kastelein et al. 1990).

From these three possible scenarios, only the third one, i.e. the adoption by a female that has lost her calf, is an option for reintegrating a live-stranded newborn calf. The first scenario, i.e. the adoption by a pregnant female, would only be a temporary solution (Smolders 1988). In the second scenario, i.e. the adoption by a dry female, a newborn calf would be dead by the time the adopter would start producing milk (Ridgway et al. 1995).

The likelihood of an adoption may increase with the number of potential adopters. The low survival rates of yearling belugas (Doidge 1990) suggests that in a healthy population, a significant proportion of the females that have given birth lose their calves during the first years e.g., in Indo-Pacific bottlenose dolphins *Tursiops aduncus* for example, calf mortality is 44% by age 3 (Mann et al. 2000). This suggests the presence of at least some females being in a position to adopt a calf every summer. Simply calculated, if there are 900 belugas in the SLE population with 66% mature individuals with a sex ratio of 1:1 and a 3-year reproductive cycle, 100 females are likely to give birth every summer. Applying various calf survival rates, for example, from 20 to 40%, would leave a fair number of potential adopters. This assumes that the reason behind the death of the calf is not related to poor body condition of the female or its inability to feed the calf. The proportion of potential adopters might be different in the compromised SLE beluga population as both calf and female perinatal mortality increased (Lair et al. 2016). The influence of increased calf mortality in recent years on the number of potential adopters is unknown. Necropsies conducted between 1983 and 2014 showed that newborn full-term beluga calves (n=19) have died at, or during the first week after, birth without significant underlying disease issues. It is assumed that the calf died of a combination of dehydration and electrolytic imbalance following failure to nurse (Lair et al. 2016). If the failure to nurse is related to the mother's insufficient energy resources or its death, the increase in calf mortality will not result in an increased number of potential adopters. If otherwise, then there may be more potential adopters.

The likelihood of an adoption might also depend on individual behaviour. Some females can be reluctant to adopt a calf to nurse (Ridgway et al. 1995, Gaspar et al. 2000). Similarly, some calves are a lot more prone to seeking care from foster mothers (Hill and Campbell 2014). The general condition of the calf will therefore be critical in the possibility of an adoption. Because the main reported cause of death in SLE newborn calves is failure to nurse and not diseases (Lair et al. 2016), there is potentially a certain proportion of the live-stranded newborn that are still strong enough to swim, as seen with the first rescued and released calf in 2008 who remained for over 8 hours in quasi-constant interaction with other belugas before we lost contact.

RISK ASSESSMENT

In the following section, we address risk in terms of animal welfare, disease and pathogen transfers, cost on the adopters and the financial cost associated with translocation.

ANIMAL WELFARE

One of the drawbacks of this approach may be the prolongation of the suffering of the newborn calf. Whereas the risk of increased suffering cannot be eliminated, a quick translocation and the use of the best practices in transport and temporary support developed by the zoos and aquariums veterinarian community would reduce this risk. Upon release in proximity to a selected group of females, the calf will most likely be immediately in contact with other belugas as occurred during the three previous releases (Annex 1). It is difficult to measure the level of stress or suffering imposed on the released calf by this stage of the operation. While it may be within the range of situations encountered by other free-ranging newborn calves, relocated calves will not benefit from the protection of their mother against other beluga. Interactions where belugas thrash around newborn calves have been documented on a regular basis in the SLE (GREMM, unpublished data).

Given the tendency of beluga neonates to call during separation events (Vergara et al. 2010), it is also possible that, if left alone, the calf could attract the attention of predators such as killer whales or of groups of beluga that might harm or interact negatively with the calf. Killer whales are, however, extremely rare in the summer range of the SLE belugas (Lawson and Stevens 2013).

DISEASES AND PATHOGEN TRANSMISSION

There are concerns over the health of the global population of marine mammals if the number of rehabilitated animals becomes large in proportion to the population (Moore et al. 2007). The first, supported by scientific data, is “the introduction of pathogens acquired or modified during rehabilitation to a naïve wild population” via contamination and development of higher virulence due to antibiotic treatments (Moore et al. 2007). A second, a “perceived issue not yet supported by scientific data,” is the “artificial support of the genetically not-so-fit by releasing rehabilitated animals that otherwise would have died on the beach through natural selection process” (Moore et al. 2007).

The potentially small number of candidates for release, the proximity between the stranding and the release sites, and the fact that most documented calf mortality was a result of failure to nurse and not disease should minimize these risks.

COST ON POTENTIAL ALLOMOTHERS

The adoption of an orphan calf could delay the allomother’s own reproduction schedule. In the case of a female that would have lost her calf before adopting an orphan, the additional energetic burden could also impede her survival. If the adopted calf survival or reproductive success is compromised, the cost incurred by the allomother could reduce net population production.

FINANCIAL COST OF TRANSLOCATION

The translocation of live-stranded newborn belugas, in the way it has been conducted so far in the SLE, involved a minimum amount of equipment, and the time and coordination of a few persons over a period of one to two days. In the context where documentation of the fate of the relocated individual would be pursued, financial costs may become more substantial.

CONCLUSION

Seven live-stranded newborn SLE calves were not translocated or euthanized. All of these calves died within 10 days of their discovery. Three calves that were translocated into groups of females and young in the hope they would be adopted have shown that stranded calves could survive up to their release (up to 12 hours). All three resumed swimming and interacted with members of the groups in which they were released. Post-release tracking was short however, with only one calf being tracked successfully for more than 1 hour. This one calf stayed in quasi-constant interaction with the members of the reception group for up to 8 hours. The three calves were not resighted and their fate remains unknown. Continuing screening of dead and biopsied SLE beluga DNA profiles have not, to date, identified any of the three released calves.

The literature review presented here showed that although adoption of unweaned odontocete calves may be possible, it is improbable. In the wild, none of the documented cases involved newborns. The few cases of successful adoption of odontocete newborn calves under human care were all by non-pregnant and non-lactating females. In these cases, calves were fed via a tube over several days until the fostering female’s milk was rich enough. In the wild, a newborn calf will have died before a non-pregnant and non-lactating adopter could start producing milk. The only option for reintegrating a live-stranded newborn calf would be the adoption by a female that has lost her calf and is in good enough health to support lactation. In the only case where this scenario was attempted under human care, unwillingness from the allomother resulted in the death of the calf.

The brief risk assessment presented above did not identify any major potential cost or risk associated with the translocation of live-stranded newborn belugas. Although the risk for diseases and pathogen introduction be low because these calves were not brought into a captive facility, the translocation may simply prolong the period before death and expose the calf to negative interactions with other belugas which may increase suffering to an unknown level. Further, the energetic cost incurred by the adoptive female and the possible delay of her own reproductive schedule might not be compensated if the adopted calf survival of reproductive success were compromised which could result in a negative net population production.

As rescued and rehabilitated nutritionally and socially dependent odontocete calves are considered non-releasable in Canada (DFO 2018), this leaves the relocation of live-stranded SLE newborn belugas near female herds without rehabilitation in remote facilities as the sole option with a potentially direct positive demographic contribution to the population recovery (but see Hammill and Lesage (2018) for an evaluation of the conservation value of such translocations).

In the case where translocation was to be attempted again, rigorous protocols should be implemented for the selection of candidates, pre-release and transportation, and monitoring.

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APPENDIX 1. PAST RESPONSES REVIEW

The 13 reported cases of live-stranded newborn belugas are all accounted for in the newborn mortality count of the SLE beluga carcass recovery program (N=97 between 1983 and 2017).

Date	Sex	Response	Outcome
Aug 31st 1991	M	Transported to Aquarium du Québec for rehabilitation, Québec, Qc	died after 10 days
Aug 11th 1992	F	Transported to Biodome de Montréal for rehabilitation, Montréal, Qc	died after 3 days
Aug 10th 1995	F	Pushed back to the water by witness and restranded *	died
July 29th 1997	F	Transported to Institut Maurice-Lamontagne (DFO) Mont-Joli, Qc	died < 1 day
July 31st 2000	F	Transported to Institut Maurice-Lamontagne (DFO) Mont-Joli, Qc	died after 2 days
July 30th 2003	F	Transported to Institut Maurice-Lamontagne (DFO) Mont-Joli, Qc	euthanized
Aug 05th 2008	M	Translocation: released in a herd of females and young and followed for 8 hours, lost contact.	unknown
Aug 12th 2012	F	Transported to Faculté de Médecine Vétérinaire (UdeM) St-Hyacinthe, Qc	euthanized
July 25th 2014	M	Kept in the water, evaluated as very weak, died 9 hours after first report	died
Aug 03rd 2014	?	None (half stranded, moved back with the tide 4 hours after first report, not resighted)	Lost **
Aug 29th 2015	F	None	died
Jun 30th 2016	F	Translocation: released in a herd of females and young and followed for 1 hour, lost contact	unknown
July 31st 2016	F	Translocation: released in a herd of females and young and followed for 1 less than an hour, lost contact	unknown

* Unsupervised response

** The carcass of a newborn stranded 3 days later at the same site, bearing similar markings. It is presumably the same individual but its identity could not be confirmed