



# REPORT

**THE EFFECTS OF FOOD PROVISIONING ON WILD DOLPHINS  
TO FACILITATE TOURIST-DOLPHIN INTERACTIONS**



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## EXECUTIVE SUMMARY

Wildlife tourism is the observation and interaction with wild animals in their natural habitats. Last year, an estimated 105 million international tourist arrivals travelled for wildlife tourism and this number is growing annually (World Tourism Organization., 2014). This popularity has created an increasing demand for close encounters with wildlife, which tourists and tourism operators often facilitate by the feeding of wild animals (Orams., 2002). Food provisioning practices are widespread and target a range of species. However, there is growing concern for the negative impact feeding can have on wildlife (Orams., 2002.). Deliberate and long-term provision of food can alter natural behaviour patterns, increase aggression, injury or disease, and even alter population levels (Orams., 2002). Feeding for tourists has created a controversial issue, where wild animals are treated as commodities to facilitate tourist-animal interactions with little concern for their welfare or long-term survival.

Monkey Mia Resort in Western Australia is one such location where food provisioning is used to facilitate wildlife experiences. Wild bottlenose dolphins have been hand-fed here since the 1960s, as Monkey Mia is one of several sites across Australia with legal permission to feed free-ranging marine mammals, despite it being illegal throughout Australia (1998 Wildlife Conservation Notice). Over the years the continued provision of food at the resort has affected dolphin calf survival and maternal care, and management protocols introduced to mitigate these issues have only partially addressed the problem (Foroughirad & Mann., 2013). New research shows that almost 60 years after the food provisioning program began, the negative effects are ongoing, with dolphin calves still showing abnormal behaviours (Senigaglia et al., 2019; Senigaglia et al., 2020).

Action for Dolphins is a marine conservation organisation working to protect dolphins, whales and other marine animals from the many threats they face. This report was initiated in response to an announcement from Monkey Mia Resort declaring their intent to recruit new dolphins into their food provisioning program. At the time of the announcement, three adult dolphins were missing (presumed dead) and five calves had died over a period

of five years. Action for Dolphins therefore undertook a detailed review of scientific literature to investigate the potential consequences of providing food to additional wild dolphins.

By using a program of structured secondary research, Action for Dolphins identified five major areas of concern for the practice of hand-feeding wild dolphins. These are explored in detail throughout the report, but include aggression, as provisioned dolphins demonstrate a significant increase in aggressive behaviour towards other dolphins and humans, as well as a rise in unnatural behaviours such as begging, scavenging and patrolling (Senigaglia et al., 2019; Senigaglia et al., 2020). Dolphins conditioned to receive food from humans adopt these atypical behaviours in an attempt to receive more food, which in turn increases their risk of anthropogenic injury and harm (Donaldson et al., 2010). Provisioned dolphins also change their natural activity patterns, spending increasing amounts of time travelling to, from and at feeding locations, in lieu of time spent socialising with members of their pod or caring for their calves (Hazelkorn et al., 2016). This reduced maternal care has direct implications on calf survival and female reproductive success (Foroughirad & Mann., 2013). In certain locations provisioned female dolphins raise just half as many calves as non-provisioned mothers, suggesting long-term population level impacts for hand-fed dolphins (Senigaglia et al., 2019).

In summary, this report illustrates how providing food to wild dolphins can expose them to a range of detrimental effects, which could ultimately lead to their injury and, in some circumstances, death. With Monkey Mia's population of hand-fed dolphins at an all-time low, it's hoped this research will act as the first step towards the phasing out of the damaging hand-feeding program. Action for Dolphins advocates for the immediate halting of the recruitment campaign, and instead, encourages the resort's evolution towards a responsible, ethically-driven form of tourist-dolphin interaction, one which does not sacrifice animal welfare for economic opportunities but instead safeguards the future of Western Australia's wild dolphins.





“THE ACT OF FEEDING WILD ANIMALS CAN COMPROMISE ANIMAL WELFARE AND HAVE LONG-TERM CONSEQUENCES AT THE POPULATION LEVEL.”



## INTRODUCTION

Nature-based tourism is on the rise. Visits to protected areas are growing year on year, and wildlife viewing is the fastest growing tourism sector globally (Balmford et al., 2009). Tourism focused on wildlife generates an estimated global revenue of US\$47-\$155 billion each year (Senigaglia et al., 2020), and for small remote communities it can provide vital financial flows (Orams., 2002). For example, whale watching in the small South Pacific island community of Vava'u, which has a population of 16,000, is worth in excess of US\$600,000 annually (Orams., 2000). Given this significant monetary value, wildlife tourism is commonly cited as a means for promoting *in situ* conservation (Catlin et al., 2013). However, with this growth in popularity comes an increasing demand for opportunities to interact with wildlife (Orams., 2002). Where the interactions with target populations are close, e.g. swimming, feeding and touching (Christiansen et al., 2016), wildlife tourism can cause significant negative impacts to the targeted animals (Orams., 2002).

Due to the growing demand for wildlife viewing opportunities, food rewards are frequently used to mediate tourist-wildlife interactions. This practice, which is also known as food provisioning, occurs worldwide and involves a wide range of species in both terrestrial and aquatic habitats e.g. large carnivores (e.g. brown bears, black bears and dingos), dolphins, reptiles and fish (Senigaglia et al., 2020). Despite its wide application, food provisioning is becoming increasingly controversial. The act of feeding wild animals, and the related interactions, can compromise animal welfare and have long-term consequences at the population level (Orams., 2002).



# HAND-FEEDING DOLPHINS

As the demand for close encounters with wild animals increases, interactions with charismatic megafauna (such as dolphins) are often top of the list (Fraser et al., 2006). Food provisioning to facilitate tourist-dolphin interactions occurs worldwide. Its effects have been studied in populations of provisioned wild dolphins within the USA, Brazil and Australia. Each of these peer-reviewed, scientific publications has lifted the lid on the effects of hand-feeding wild dolphins, and the evidence is overwhelmingly against it:

## ACTIVITY PATTERNS:

When wild dolphins are fed it can have detrimental effects on their activity patterns (Alves et al., 2013). As dolphins learn to associate specific locations with food, they change their ranging habits, spending increasing amounts of time focusing on humans in provisioning locations (Mann & Smuts., 1999). This means hand-fed dolphins spend less time foraging or socialising with conspecifics and more time travelling (Hazelkorn et al., 2016). If the provisioned dolphin is a female, this can have serious implications for her offspring (Mann & Smuts., 1999). Hand-fed mothers spend increased amounts of time waiting for food instead of caring for their calves, reducing opportunities for calf bonding and increasing separation (Mann & Smuts., 1999). This affects calf behavioural development and forces calves to spend more time foraging to compensate for the lack of maternal care (Mann & Smuts., 1999).

## AGGRESSION:

Food provisioning can increase dolphin aggression (Alves et al., 2013; Senigaglia et al., 2020; Orams., 2002). Dolphins conditioned to receive food can become aggressive towards other dolphins (Mann & Smuts., 1999) and humans (Cunningham-Smith et al., 2006) due to the competition between animals for access to food (Orams et al., 1996). People who engage in hand-feeding of wild dolphins are at risk of injury from bites or other aggressive behaviour (Cunningham-Smith et al., 2006). There are documented examples of wild dolphins engaging in “pushy” behaviour with humans, with levels of “pushiness” increasing when a greater number of dolphins or adult males are present (Orams., 2002). There are several well-known cases of lone, male bottlenose dolphins who, after regular social interactions with people, have gone on to cause injury or endanger human lives with their aggressive “roughhousing” behaviour (Orams et al., 1996). For example, ‘Tiao’ a male bottlenose dolphin that was a regular at beaches in Brazil in the early 90s, killed a swimmer and injured 28 others after repeated interactions and harassment from humans (Santos., 1997).

## FEMALE REPRODUCTIVE SUCCESS:

Research carried out in Australia identified that provisioned female dolphins experience a decreased reproductive success compared to non-provisioned females (Foroughirad & Mann., 2013; Senigaglia et al., 2019). In some locations, hand-fed mothers wean just half as many calves as non-provisioned mothers (Senigaglia et al., 2019). This decrease results from a combination of reduced maternal care, and differences in behavioural budgets between provisioned and non-provisioned dolphins (Senigaglia et al., 2019). For instance, one measure of maternal care is infant position, which is defined as when a calf swims under the mother, lightly touching her abdomen (Mann & Kemps., 2003). From the age of three months old until weaning, calves typically spend 30–60% of their life in the infant position, as all nursing occurs there and it offers protection to the calf (Mann & Kemps., 2003). But calves from provisioned mothers experience increased mother-calf conflict over access to this position (Mann & Kemps., 2003). Calves spend less time in infant position when in provisioning areas compared to when not, and repeatedly try to get there with little success. Since mothers are often in the provisioning area for extended periods of time, calves must sometimes wait for the entire hand-feeding period before accessing infant position (Mann & Kemps., 2003). It’s thought that at provisioning areas mothers are preoccupied with obtaining fish, and may even use shallow water to prevent calves from gaining contact and nursing access, thereby reducing maternal care (Mann & Kemps., 2003).



## CALF SURVIVAL:

Dolphin calf survival is also negatively affected by food provisioning (Foroughirad & Mann., 2013). Research shows that calves from hand-fed females are typically smaller and have significantly lower pre-weaning survival rates (Mann & Kemps., 2003; Senigaglia et al., 2019). As provisioned mothers provide less care, their offspring alter their behaviour in order to compensate (Foroughirad & Mann., 2013). Calves from hand-fed mothers typically spend more time foraging, separate from their mothers more often, rest less frequently and have fewer close associates compared to their non-provisioned counterparts (Mann & Smuts., 1999; Foroughirad & Mann., 2013). In species in which close associates are vital for survival (such as bottlenose dolphins) these disrupted social bonds can directly impact their survival (Donaldson et al., 2012). Mann and Barnett (1999) describe an incident in which an emaciated calf was killed by a tiger shark whilst its mother begged for fish from tourists. The mother subsequently defended the carcass from the tiger shark, suggesting had she not been pre-occupied and situated 70m away from her calf, she may have prevented the death (Mann & Barnett., 1999).

## MALADAPTIVE BEHAVIOURS:

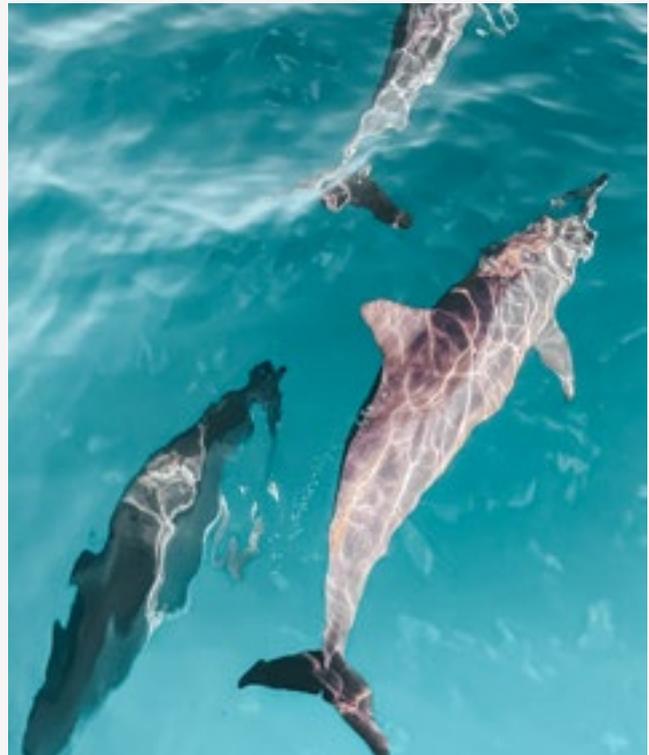
Food provisioning has been linked to unnatural behaviours such as patrolling, scavenging, fishing line depredation and begging (Senigaglia et al., 2019). Dolphins that engage in human interactions adopt these behaviours as part of their usual foraging activities (Powell & Wells., 2011). They reschedule natural behaviours to incorporate novel ones that are aimed only at soliciting food from humans (Powell & Wells., 2011). In turn, these behaviours can increase the risks of boat collisions and fishing gear entanglements (Christiansen et al., 2016; Senigaglia et al., 2020). Research has confirmed an increased risk of anthropogenic injury in provisioned dolphins situated in both Australia and the USA (Donaldson et al., 2010). What's more, these maladaptive behaviours can be socially learned and passed on to other members of the population (Senigaglia et al., 2019). Dolphins typically show strong vertical transmission of foraging behaviour, meaning detrimental behaviours are likely to be passed directly from mother to calf (Senigaglia et al., 2019). Calves from mothers habituated to humans as a source of food may not learn essential hunting and foraging skills, instead becoming dependent on food provisioning for survival (Cunningham-Smith et al., 2006).



## TOURISTS' VIEWPOINT

Tourism, and its associated financial impact, is a significant driving force behind many food provisioning establishments. However, tourists' understanding of their effects on wildlife is often limited. Tourist's views are influenced by personal knowledge and experience, and often do not align with the actual ecological consequences (Senigaglia et al., 2020). The impacts of hand-feeding are complex and multifaceted, with indirect effects on social behaviour and maternal care which are not immediately observable to visitors (Senigaglia et al., 2020). Some tourists may be unaware of their impact, but others may alter their views to justify the ethical implications of their actions by their immediate satisfaction (Sezer et al., 2015). This cognitive dissonance leads to what has often been described as "unintentional unethical behaviour" (Sezer et al., 2015), and may even be enhanced by the legality of the practice (Senigaglia et al., 2020). Tourists may find an activity acceptable because it is regulated by an authority, irrespective of any detrimental impacts it may be having on the target species (Moorhouse et al., 2017).

These wider patterns are typically replicated within dolphin food provisioning programmes, where visitor demand for close interactions with dolphins contrasts with their concern for dolphin welfare (Senigaglia et al., 2020). New research published in 2020 found that tourists who participated in food provisioning also rated the welfare of dolphins as very important, suggesting a disparity between their desires for experiences and concern for dolphin wellbeing (Senigaglia et al., 2020). Visitors were deeply concerned with the animal's welfare, but also happy to pay a higher fee to maintain proximity to the dolphins (Bach & Burton., 2017). The contradiction between visitor support for close wildlife interactions and the resulting ecological impacts has been documented in food provisioning programmes within Australia and around the world (Senigaglia et al., 2020). It creates a challenge, where businesses rely on highly managed programmes that promote dolphin conservation and welfare, but have detrimental long-term impacts on the species they rely upon for business and are seeking to conserve (Senigaglia et al., 2020).



“VISITORS WERE DEEPLY CONCERNED WITH THE ANIMAL'S WELFARE.”





## FOOD PROVISIONING IN AUSTRALIA

The provisioning of free-ranging marine mammals is illegal under state and federal law in Australia (1998 Wildlife Conservation Notice). Despite this, illegal feeding of dolphins has been reported at several locations, including Cockburn Sound in Western Australia and Amity Point on North Stradbroke Island, Queensland (Senigaglia et al., 2019). Dolphins are also food-provisioned as part of licenced programs within Australia (Senigaglia et al., 2019). The four locations that have been granted legal permission include: Tangalooma and Tin Can Bay in Queensland, as well as Monkey Mia and Bunbury in Western Australia (Senigaglia et al., 2019).

Monkey Mia in Shark Bay is the longest running food-provisioning site for wild bottlenose dolphins in the world (Mann & Kemps., 2003). Hand-feeding has been carried out at the resort since the 1960s, with regulations introduced in 1989, seven years after researchers began long term-monitoring of the dolphins (Mann & Kemps., 2003). Early studies found that dolphin calves born to provisioned females received less care and had higher mortality rates than calves of non-provisioned females, so specific protocols were brought in, and later modified, to try and lessen the impact on calf mortality (Foroughirad & Mann., 2013). Despite these altered provisioning regimes, recent studies identified that the protocols

have only partially addressed the negative effects of food-provisioning, and these damaging impacts are still seen on wild dolphin behaviour at the resort (Senigaglia et al., 2019; Senigaglia et al., 2020).

In 2019 Monkey Mia initiated a recruitment drive to increase the number of dolphins participating in their hand-feeding program. Regular dolphin visitors had dropped to just two adults, after three regular dolphins had gone missing (presumed dead) and five dolphin calves died over a period of five years. The decline in Monkey Mia's hand-fed dolphin population provided the resort with a unique opportunity to phase out their food provisioning program. 50 years of ecological impact could have been brought to a close and a transition to more sustainable forms of wildlife-based tourism initiated. Instead, the decision was made to prioritise the demand for tourist-dolphin interactions, and increase the number of adult females participating in the hand-feeding program. This decision will ensure the cycle of food-provisioning, altered behaviour, decreased maternal care and increased mortality continues. It runs counter to the sustainability principles of eco-tourism and jeopardies the future of a dolphin population, one which is essential to the resort's survival (Senigaglia et al., 2019).



## SUGGESTED ACTION

The decline in Monkey Mia's hand-fed dolphin population has created the ideal opportunity to scale back, and ultimately phase out, the resort's harmful food provisioning program. As such, Action for Dolphins suggests the Minister for Environment should adopt the following course of action:

- Halt the recruitment of new, female dolphins into the hand-feeding program at Monkey Mia Resort immediately;
- Publish the latest review of Monkey Mia's food provisioning program conducted by independent, scientific experts;
- Acknowledge that the behavioural development of calves from hand-fed mothers continues to be affected at the resort, specifically with these individuals foraging more, separating from mothers more often and resting less often, and implement protocols to reverse this change;
- Promote Monkey Mia's long-term evolution towards sustainable, eco-tourism based activities, which do not involve the provision of food but instead prioritise dolphin welfare over tourist experiences;
- Formulate a detailed plan in conjunction with scientists and dolphin welfare experts to safely phase out the practice of hand-feeding the dolphins at Monkey Mia, ensuring no further harm is caused to those animals currently dependent on the provisioning program;

- Ensure the Department of Biodiversity, Conservation and Attractions' new Monkey Mia Management Plan safeguards the future of Monkey Mia dolphins and guarantees a positive contribution towards the conservation of Western Australia's marine animals.

By making the suggested changes the Minister can protect Shark Bay's iconic population of dolphins from harm, and by implementing such a progressive and forward-thinking transition it would reflect favourably upon the State's approach to wildlife conservation.



## CONCLUSION

Food provisioning of wildlife by humans is a controversial issue. Despite the evidence documenting its negative impacts, the feeding of dolphins is used to facilitate dolphin-tourist interactions throughout Australia. Orams (2002) identifies food provisioning as an activity that falls between semi-captive and wild on a scale of tourist-wildlife interactions. It has even been suggested that hand-fed dolphins cannot be considered truly wild because they are, at least in part, as dependent on humans as captive and semi-captive animals (Alves et al., 2013). Dolphins are often characterised in popular media as our peers of equal intelligence (Alves et al., 2013), yet by continuing to feed them to facilitate nature-based tourism, we are treating them as commodities with little concern for dolphin welfare and long-term survival. Many people enjoy these close encounters with wild animals, but with such harmful ecological consequences, the question remains as to whether we can justify the risk to wildlife.



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