

SONAR

No. 6 • AUTUMN • 1991

THE MAGAZINE OF THE WHALE AND DOLPHIN CONSERVATION SOCIETY



DOLPHIN SPOTTING

Denise Herzing explores
the world of spotted dolphins

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Published by the Whale and Dolphin Conservation Society,
19a James Street West, Bath, Avon
BA1 2BT, Great Britain.
Tel (0225) 334511 Fax (0225) 480097
Registered Charity Number 298656

SPECIAL THANKS

The Whale and Dolphin Conservation Society would like to thank the following companies for their generous support:

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NEW LIFE MEMBERS

WDCS welcomes the following people as Life Members:

Mrs Pam McCloy
Mr Tim Wheeler
Ms Sally McMiken

IN MEMORIAM

WDCS would like to pass on our sympathy and grateful appreciation for gifts sent in memory of Mr James McMillan and Mrs D. Brodie.

We also wish to acknowledge the legacy generously bequeathed to WDCS by the late Reginald Miller.

WITH THANKS

Jim Griffin, Griffin Video
Communications
Colin Shepherd, South West News Agency
Bob Talbot
Dr Sidney Holt
Dr Robbins Barstow
Bill Maguire

Design and artwork by
Arebus Design,
Stratton-on-the-Fosse,
Somerset

Typesetting by
Avonset,
Midsomer Norton,
Avon

Printed by
Clarks Printing Services,
Glastonbury,
Somerset

The views and opinions expressed by the authors in 'Sonar' are not necessarily those of the Whale and Dolphin Conservation Society.

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It's a hot summer day in the Bahamas, even though we are anchored 40 miles offshore. We sit on our research platform, an ocean-going catamaran, anxiously awaiting a sign of a dorsal fin, or the breach of an Atlantic spotted dolphin, *Stenella frontalis*.

Three thousand miles away the pantropical spotted, *Stenella attenuata*, are being slaughtered in tuna nets. What a contrast this is! In one ocean, we are killing these intelligent social mammals and in another, we benignly observe and interact with them to learn more of their life history . . . and of their minds.

Suddenly, a group of dolphins is sighted. They are travelling in a deeper channel of water on the sand bank, one that they apparently use to navigate on and off the bank. We listen with the hydrophone for familiar sounds. The group of dolphins veers our way like a torpedo as we enter the water equipped with cameras and sound gear. As the dolphins approach underwater, they use their familiar echolocation clicks to scan us . . . just a short blast during their initial approach, but for good reason. This is a 'nursery' group and contains some of this year's newborns.

The group is escorted by six male dolphins, among them are some of the oldest dolphins we know. There's a trio of heavily spotted adult males: Romeo, Ridgeway, Shorty, each sexually mature and at least 20 years old. Among the new mothers is Rosemole. In 1985 when we began our observations she was a juvenile. Now, after reaching sexual maturity at an estimated age of 12, she has given birth to her first calf, a female we have named

Mimicry is a possible window into the dolphin's mind.

WHO'S watching WHO?

by DENISE HERZING

Rosebud. One of her close female associates, Mugsy, was also observed earlier this week, but without a calf. She, like Rosemole, was pregnant in the autumn of 1990 when we last observed them together. Most likely Mugsy's first calf did not survive.

GROWING UP

Discipline of the newborns by the mothers is strict. By nature, newborns are curious and exploratory. Even though the shallow sand banks provide a refuge from many large predators, it is not unusual to see shark bite scars on the dolphins. Tiger sharks, hammerheads and bull sharks inhabit these waters. So when newborns stray too far, the mothers will often discipline them by holding them down on the bottom until the youngster begins to vocalize.

It is an effective lesson which serves to keep the calf nearby. In addition, there are various ways distressed calves are assisted. Members of the group respond to the excitement/distress calls of calves of any age. As soon as a member of the group reaches the distressed youngster, vocalizations cease, making them apparently less perceivable to nearby predators.

The calves lucky enough to survive will spend the first three to five years closely associated with their mothers. During this period they will gradually develop dark spots on their undersides, learn how to forage and catch prey, and begin to socialize and interact with other members of their society. They will form bonds and associations with their siblings and with other calves in the nursery group. The development of their communication system is intricately linked both to observation and interaction with other members as well as their mothers. To date we have observed that the calves only leave their mothers and move into juvenile subgroups when another offspring is born.

The calves lucky enough to survive will spend the first three to five years closely associated with their mothers.

The group moves on, obviously pre-occupied with travelling to some unknown destination. This time we have only observed them briefly, allowing us to document newborns, identify features such as dorsal fins

Photo courtesy Denise Herzing/Wild Dolphin Project.



CARIBBEAN

At the beginning of this year an eighty-acre marine sanctuary and rehabilitation centre was established in the Caribbean. This was set up as part of the 'Into the Blue' project led by 'Zoo Check' in the U.K. and PRIDE in the Turks and Caicos. Three dolphins, first Rocky closely followed by Missie and Silver were flown safely across the Atlantic from two dolphinariums (Morecambe and Brighton) in the UK and released into the sanctuary. They were carried by boat into the Centre's fenced-off lagoon, and placed in a veterinary observation pen until they had had a chance to acclimatize to their new environment. A few days later they were released into the lagoon where they roamed the sanctuary together, often streaking through the water at high speed and leaping into the air.

Within three weeks, the dolphins were chasing and eating LIVE fish. It is hoped that they will eventually learn to fend for themselves again and can safely be released back into the wild.

CORNWALL

It was revealed at this year's International Whaling Commission (IWC) meeting in Iceland, that several UK fishermen in Cornwall have each purchased nylon monofilament drift-nets several miles long in order to fish for albacore tuna off southwestern Ireland.

WDCS hopes to work together with UK fishermen to significantly reduce the number of cetaceans currently caught in their nets.

THE GULF

The Gulf oil spill was substantially larger than any previously recorded oil slick, growing to twice the size of the total spillage during the Iran-Iraq war. The best current estimate is that 6 million barrels of oil were discharged.

There are still huge areas covered in an oily sheen mixed with oil mousse. Along the coast, inter-tidal habitats have been badly affected as the heavier, sludgy oil mousse has come ashore. Marine organisms have been smothered as the saltmarshes, mangroves, mudflats and sandy beaches have been covered in oil.

Despite the scale of this problem, sea mammal mortalities have been low, as the animals appear to have avoided the slick. Sixty dolphin carcasses have been washed up along the Saudi and Bahrain coast, but these may be coincidental to the oil spill.

There is, however, the possibility that fish stocks in the area have been adversely affected, which will, of course, affect animals which feed upon them.



'Rocky' in the pasture.

Photo courtesy William Johnson.

IRELAND

In June 1991, the Irish Government declared their territorial waters a whale and dolphin sanctuary, the first in Europe. The sanctuary is within the exclusive fishery limits of the entire country and this example will hopefully be followed by other maritime nations. The Irish Whale and Dolphin Group plan to build on this important declaration to help ensure that an abundant cetacean community continues to exist in Irish waters.

AUSTRALIA

A scientist who has analysed samples from dead whales and dolphins that washed up on Australia's east coast between 1987 and 1991, found that their tissues had significant levels of organochlorines (such as PCBs) and heavy metals. Several of the animals had died from bacterial or fungal infections which may have been contracted due to the immunosuppressive effects of the pollutants. This is the first report of toxic wastes in cetaceans in the southern hemisphere and has raised concerns about the extent of marine contamination around Australia's east coast.

NORTH AMERICA

Two pilot whales who stranded themselves along with some sixty others on Cape Cod last December, have been returned to the sea, six months after their rescue.

The two calves were rescued from the beach and taken to the New England Aquarium in Boston. Here, they were rehabilitated and taken care of until it became possible to return them to the wild.

The whales were cradled in stretchers and taken out to sea by ship.

They were released amongst a pod of pilot whales which had been located in the area. This was considered important for their survival, as pilot whales are social creatures which live in large groups.

Both whales were fitted with satellite tags before their release. This will enable aquarium officials to monitor their actions and movements for about six months until the tags corrode and fall off.

It is hoped that some valuable insights into pilot whale behaviour will be obtained.



Pilot whales stranded at Cape Cod, December 1990.

Photo WDCS.

and constellations of spots of individuals, and document subgroup structure. Subadult males, foraging juveniles with a supervisory young adult, or courting young adults are also examples of other typical subgroups that we observe.

Spotted dolphins gradually develop spots as they age. When first born, they have no spots, giving them the appearance of young bottlenose dolphins. During their first three years, they develop a few spots on their underside, but are still considered two-toned. After they leave their mothers they form juvenile subgroups and continue to develop more spots on the underside and top of their bodies, producing a 'speckled' pattern. When females reach the next stage of spotting called 'mottled', many also become sexually mature and become pregnant for the first time. For males, sexual maturity is correlated with the final phase of spotting which we call 'fused'.

As the dolphins mature and move through these age classes, they assume different roles in their society. Joyous youth turns into responsible adulthood in many ways. A once rambunctious juvenile, Little Gash (who is a recently sexually mature female), can now be observed supervising the juvenile subgroups during forays to fishing grounds. Stubby, a recently fused male, now associates with older males and is actively courting receptive females. Rules and responsibilities of the society, as they are passed on and learned, may help to ensure the safety and stability of the group over the years.

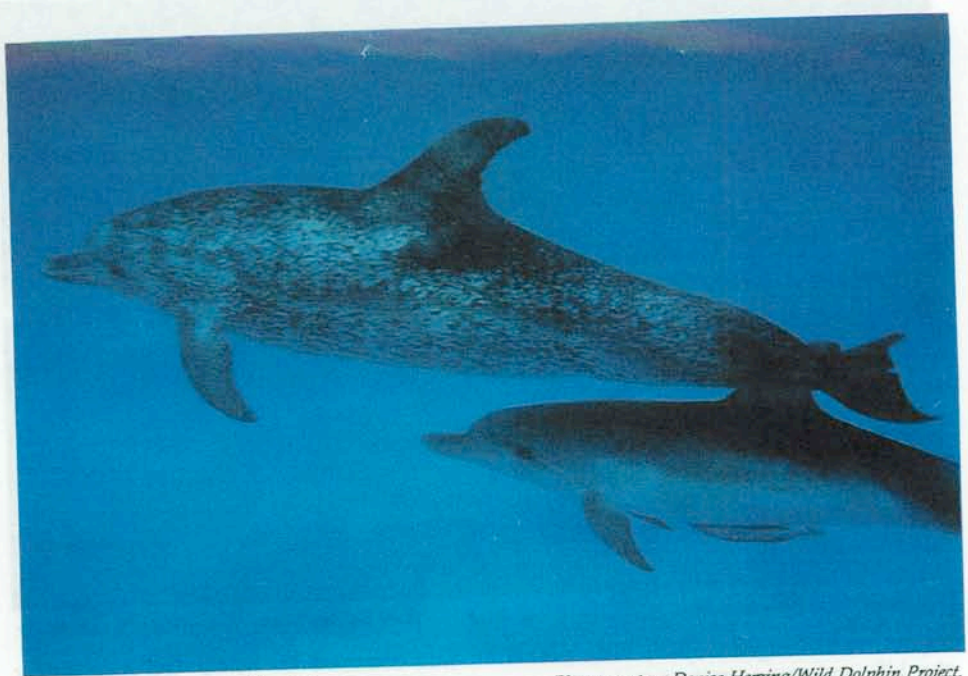
Although they are supposed to be crepuscular feeders (feeding at dawn and dusk), it is not unusual to observe the spotted dolphins utilizing food resources on the sand banks during all hours of the day. This includes bottom fish such as the eyed flounder, snakefish, and schooling fish including needlefish, ballyhoo, and flying fish. Occasionally they regurgitate their meals, giving us an opportunity to collect samples directly ... everything from needlefish vertebrae to squid pens.

AN ANTHROPOLOGICAL TWIST

Not only is it productive to observe and record the dolphins' own behaviour, but this situation is a fascinating opportunity to be assimilated into their society for brief periods. This has been a viable approach both in anthropology and in primate field studies. Close contact provides us with an opportunity to develop rapport with individuals and to observe their behavioural dynamics.

Could they possibly be as interested in exploring the aspects of our intelligence as we are theirs?

Encounters with the dolphins can last for five minutes to four hours and often allow extensive underwater observation. These sequences of behaviour may include nursing, mating and courtship, play and aggressive behaviours. We document each behaviour with its correlated sounds using an underwater video. We also review and analyze



A mother/infant pair – Gemini and Gomer.

Photo courtesy Denise Herzing/Wild Dolphin Project.

situations. Frequency modulated whistles are used for long distance and contact behaviours. Bursts of pulsed sounds are used for close proximity interactions, especially to mediate conflicts. Echolocation clicks are used to orient on prey and objects. Non-verbal signals, such as body postures and tactile cues are also used. Signals of different types can modify or supplement others, such as the increased intensity of the tail slap, the pectoral fin rub, or the repetition rate of a particular vocalization. Communication is contextual and complex in the dolphin society.

PERSPECTIVES AND POSSIBILITIES

There is certainly no lack of history for humans interacting with dolphins. Most encounters have been with solitary bottlenose dolphins, *Tursiops truncatus* and occasionally with groups of bottlenose dolphins such as those at Monkey Mia in Australia. Many have speculated that socially outcast dolphins seek out humans for companionship. However, this does not seem to be the case with the Atlantic spotted.

They are curious as a species, as well as individuals within a species. In the Bahamas, encounters are with groups of spotted dolphins in their natural habitat and within their stable social structure.

Another interesting aspect which has developed over the years are the increasing encounters with bottlenose dolphins in the area.

In 1985, our first season with the spotted, we noted that the local bottlenose would often be in the company of adult spotted!

Now we know that these two species travel, forage, and socialize together, even mating occasionally. The bottlenose dolphins now come in with their own family groups and have begun tolerating our presence in the water. This provides a new opportunity for observing the bottlenose dolphin in the wild.

Of course, interacting with wild dolphins is not necessarily the best thing for them. As a phenomenon, it is intellectually fascinating to explore. As a potentially exploitable situation, it is dangerous. Public desire to swim with wild dolphins is growing. This is still better than other types of interactions more fatal to the dolphins, but it can still have a negative





Porpoising Atlantic spotted dolphin.

Photo courtesy Denise Herzing/Wild Dolphin Project.

impact if not managed properly. Rules exist in the U.S. and some international sanctuary areas to avoid some of the obvious problems, such as changes in behaviour and dependency on food resources. Recently the National Marine Fisheries Service has outlawed the feeding of wild dolphins by dive boats in the Gulf of Mexico. In addition, the capture of

wild cetaceans for human use is no longer acceptable to many people, and most likely unacceptable to the cetaceans as well.

What other potential interactions with cetaceans might we have? What fascinating aspects of life underwater can we learn by observing these creatures in their own environment? Many exciting studies around

There is certainly no lack of history for humans interacting with dolphins.

In the Bahamas, the spotted and bottlenose dolphins are not immediately endangered by fishing techniques, pollution, or loss of habitat as many small cetaceans around the world are. Here, they are tolerant of us in the water and seem to have their own fascination with *Homo sapiens*. Could they possibly be as interested in exploring the aspects of our intelligence as we are theirs? How many other species might allow us this glimpse into their underwater world? Let's hope that we find intelligent and creative ways to protect cetaceans and their habitat in order to find out!

Thanks to Bahamas Dept. of Fisheries, the Bahamas National Trust, The Whale and Dolphin Conservation Society, American Cetacean Society, Cetacean Society International and the Wild Dolphin Project. Further info can be obtained from WDP, P.O. Box 12141, Lake Park, Florida 33403, USA.

Denise Herzing has developed a relationship with a group of more than 50 dolphins and has been collecting data on them since 1985. WDCS is part funding the research, education and conservation of these Atlantic spotted dolphins.

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