Basic Oiled Sea Turtle Responder Manual



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Version 1.0, 2022

Preface

This manual is created to support a basic course for trainee responders without any previous experience with sea turtles or oil spill response. After following the course, the basic sea turtle responder can help with operational activities at the beach, offshore or at the rescue centre, under supervision of a specialist sea turtle responder.

This manual was developed as part of the EUROWA-2 project, co-funded by the European Union Civil Protection (2021-2022). It is closely related to the EUROWA Part G – Basic Oiled Wildlife Response Manual, and shares some of the contents of that document, but can be used independently.

Acknowledgements

Much of the contents of this manual is drawn from the U.S. experience with the Deepwater Horizon oil spill in 2015. The response activities for oiled turtles related to this event were meticulously documented. We gratefully acknowledge Brian Stacy, lead author of Guidelines for Oil Spill Response and Natural Resource Damage Assessment: Sea Turtles (2019) for sharing his experience and reviewing this manual. A special thank you also to Alan Rees for his help and input throughout this process. Thank you to Scott Whiting, and Jose Luis Crespo for their comments on specific sections of this manual. Finally, thank you to all attendants of the workshop organized in Glyfada (Greece) in April 2022 to discuss this manual and its contents for their valuable input and revision of contents: Wiem Bousellaa, Ali Bradeddine, Sidonie Catteau, Daniela Freggi, Dimitris Fytilis, Karin Gobic, Sandra Hochscheid, Yakup Kaska, Yaniv Levy, Vicente Marco, Simona Matas, Aliki Panagopoulou, Alan Rees, Manja Rogelja and Oguz Turkozan.

For information on the individuals and organisations that contributed to this document see the back pages of this document.

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Front cover:

Oiled small juvenile loggerhead sea turtle • Picture by Yaniv Levy/Israel Nature and Parks Authority

Back cover:

Juvenile loggerhead sea turtle in the wild • Picture by Antonio diBello

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I 1. Introduction

An oil spill response is always an emergency. To be effective, the correct actions need to be put in place rapidly. It is important that the relevant authorities have an oil spill response plan in place, which can be implemented immediately in case of a spill. This response plan must include an integrated wildlife response plan. These response plans must require a level of preparedness to be maintained by all who will become involved. This is key to an effective response. Training and exercises are an important part of maintaining a level of preparedness. The suite of EUROWA courses in various aspects of oiled wildlife response are designed to aid responders of different levels of expertise and experience in achieving and maintaining this level of preparedness.

I 1.1 Purpose of this manual

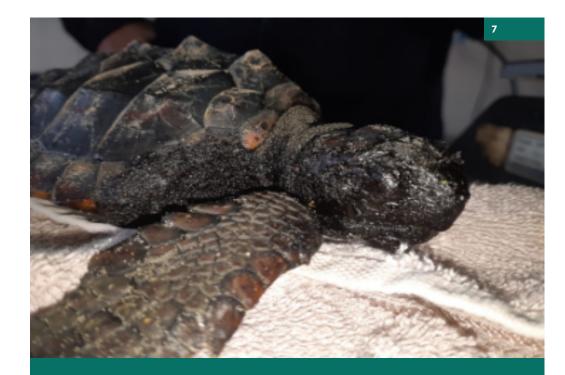
This manual supports the EUROWA Sea Turtle Basic Responder course, which aims to turn relatively inexperienced individuals into first responders with basic capability to assist experts in providing care to impacted sea turtles following a marine incident. The course provides key knowledge and develops basic skills in the handling and care of oil affected sea turtles during capture, transport and rehabilitation, as well as in specific beach operations during nesting season. Health and safety issues are explicitly included in the course.

The work of basic responders is crucial for the labour-intensive activities of a wildlife response, especially if many animals are expected to be impacted. The better trained basic responders are, the more valuable their contribution to the success of an operation will be. Trained basic responders can play an important role, even in the very early stages of a response while resources are being mobilized from further afield. It is therefore important that those who wish to become basic responders are trained as part of preparedness activities. In a larger spill this course can also train basic responders during the spill as and when the requirement for trained personnel increases.

Basic responders should always work under the lead and supervision of expert oiled sea turtle responders, who will oversee the response and create the structure and conditions under which safe rescue and other operational activities can take place.

Individuals who are interested in further improving their capabilities in oiled sea turtle care can sign up for the Advanced Responders course, after having developed further experience with sea turtle care in a sea turtle rehabilitation and conservation centre or at a nesting beach.

This Basic course can also be used as a first step in developing a basic local capability in countries that aim to establish some level of oiled sea turtle response preparedness without having facilities for sea turtle care.



I 2. Oil spill response considerations for sea turtles

Some marine animals, such as marine and coastal birds, sea turtles, seals, cetaceans and otters are extremely sensitive to oiling. Oil floats on the water surface and these animals use the water surface to rest, dive through to feed, or to break through from beneath to breathe. They thus come into direct contact with the oil, which they can also ingest and/or inhale. The effects of oiling may be lethal, and many animals affected by the oil will die at sea. However, a certain number of oiled animals (dead or alive) may arrive at the nearest coast. Depending on the circumstances this could range from only a few animals to hundreds if the oil spill occurs in the middle of an important habitat and season.

All sea turtle species are listed on the IUCN Red List of threatened species and are highly protected in most jurisdictions. That means that they need priority attention as part of the response to an environmental threat such as an oil spill. As air breathers, sea turtles can become affected by an oil slick drifting at the water surface, leading to internal and/or external effects that could be lethal or cause suffering. In the breeding period, female sea turtles come ashore to lay eggs on nesting beaches. Beached oil could hinder or soil them when leaving or entering the water, or they could arrive oiled at a clean beach and contaminate their nests and eggs. Oil could affect the quality of the nesting beach or the eggs buried within them. Hatchlings from these nests could be hindered by beached oil when they leave the nest to head to the sea. Hatchlings and post hatchling sea turtles could interact with floating oil that covers patches of floating debris that young turtles are often associated with. Oil could also affect shallow coastal areas that form the foraging habitat of turtles from different life stages, and where large numbers of adults may congregate during the mating season (Appendix I).

The Mediterranean region in particular is recognised as a global biodiversity hotspot, located between three major landmasses, Europe, Asia and Africa. It has some high value sea turtle populations and breeding areas, frequented by 3 endangered species of sea turtles (Appendix II). An oil spill that impacted prime nesting beaches during peak nesting times, would be an unprecedent event requiring the mobilisation of oiled wildlife response (staff and equipment).



Fig 1. Eggs being layed by an green turtle



Fig 2. Loggerhead turtle hatchling

Table 1: Different life stages of turtles, their preferred habitat and behavioural characteristics in the Mediterranean Basin

Habitat	Life stage	Behavioural characteristics	Seasonality
Sandy beaches	Nesting females, eggs, hatchlings	Females nest on beaches; embryos develop while buried in sand; hatchlings emerge and enter the ocean	Nesting occurs between May and August, hatch- lings emerge between July and October
Open ocean	Post-hatchlings and small juveniles, some adults	Spend more than 80 percent of their time at or near the sea surface; limited diving ability; tend to associate with floating debris; drift and swim to remain in surface currents. Adults primarily migrate through open water from residential foraging to nesting habitat	Year round
Nearshore and inshore habitats	Large juveniles and adults	Use the entire water column, from surface to bottom; active swimmers; dive frequently; spend on average 10 percent of time at the surface	Turtles are present in nearshore habitats year- round and specifically congregate at breeding areas to mate and nest during the spring and summer period



Fig 3. Juvenile green turtle

I 2.1 Opportunities for intervention

A well organised sea turtle response is a fully integrated wildlife response which is best planned within the framework of a regional or national oil spill contingency plan. An oiled wildlife response includes any activity that can be undertaken to mitigate the effects of oil on wild animals that are/may be affected following a marine oil spill.

Various response options need to be considered and activated in a timely manner when appropriate:

Preventive oil spill response

- Keeping oil away from known sea turtle areas such as
- > Pelagic and coastal sea turtle aggregations
- > Nesting beaches, especially during the nesting season
- Removing oil before it reaches sensitive areas (e.g. skimming)
- Protecting areas by excluding oil (e.g. booming)
- Keeping turtles away from the worst affected parts of a nesting beach using barriers
- Checking clean-up methodology (e.g. dispersants, beach clean-up technique) for potential effects on turtles and approving when appropriate
- Cleaning nesting beaches before the first arrivals of adult turtles at the beginning of the nesting season (when possible, depending on timing of spill)



Fig 4. Searching for oiled animals



Fig 5. Incubating eggs

Preventive sea turtle response

- Making available to management all relevant data on sea turtle behaviour in the given area
- Patrolling beaches to monitor and document nesting behaviour
- Monitoring and management of identified nests on beach: there are a lot of data available on sea turtle nesting in Europe, and most nesting beaches already have patrol, monitoring and research programmes in place
- Management of nests on oiled beaches: protect eggs and keep hatchlings free of oil

Reactive sea turtle response

- Capture of oiled sea turtles at sea and transport to a rehabilitation facility
- Rescue of stranded sea turtles from beaches and transport to rehabilitation facility
- Collection of dead oiled sea turtles on beaches for necropsy and data collection
- Attempted rehabilitation of oiled sea turtles in specialised facilities
- Release of rehabilitated sea turtles in safe environment
- Treatment of as many turtles on site as possible



13. Tasks for basic responders in a sea turtle response

Basic responders can carry out a wide range of tasks as part of the sea turtle response. Not all tasks are "hands-on" (working with animals), but each single task does in the end contribute to the wellbeing of the animals and a successful response. It is therefore important that those who want to help in a response are aware of their personal qualities, talents, skills and preferences. A basic responder coordinator will use this information to find the best match, so that basic responders can do what interests them most and where they can make the greatest contribution.

An example of tasks that are needed and can be undertaken by basic responders in a sea turtle response can be found in table 2.

Table 2: Overview of tasks that basic responders can carry out, both indoors and outdoors

	OUTDOOR ACTIVITIES			INDOOR ACTIVITIES	
Hands-on	Search and collection Capture assistant of live animals Collecting dead animals Pre-cleaning of thick oil	Transport Keeping animals comfortable for/ during transport	Nesting beaches Patrols to mark location of nests	Animal facilities Admission Clinical exam assistant Wash assistant General animal care Preparation of food	Administration Admission and record keeping
Hands-off	Communication Support to capture teams	Driving	Support to patrolling teams	House keeping Building/ construction Catering	Finacial administration Secretary Logistics administration



I 4. Health and safety

There is a big difference between health and safety in everyday life and during an oiled wildlife response. The response environment has many risks, but basic responders can protect themselves by understanding these health and safety risks relating to their work and by using appropriate mitigation measures to reduce them. The health and safety of yourself and those working around you is your responsibility.

I 4.1 Health and safety for Basic Responders

In an oiled wildlife response, health and safety of responders always comes first: if activities cannot be carried out safely, they should not be carried out at all.

General Health and Safety (H&S) considerations for organisations that aim to involve basic responders in an oil spill response are given in the POSOW Oil Spill Volunteer Management Manual (www.posow.org).

An organisation coordinating responders must ensure that all activities comply with relevant legislated health and safety requirements in the affected country. This may include suspending wildlife response operations, if necessary, from a human health and safety viewpoint, even if animals are affected. Supervisors should ensure that a risk assessment is conducted for each work site or task and that each volunteer is informed about the identified risks and the behaviour required to minimize them. General H&S recommendations for volunteers in an oiled turtle response are provided in table 3.



Fig 6. Holding an oiled Kemp's ridley turtle

Table 3: General recommendations for involving responders in oiled sea turtle response

Age	All wildlife responders MUST be over 18 years of age.
Pregnancy	Pregnant and breast-feeding women should NOT take part in wildlife response work.
Medical conditions	People with suppressed immunity and/or taking immune related medication, or those suffering from asthma should NOT take part in handson sea turtle response work. Sea turtles can be large and heavy: people with orthopaedic conditions, particularly back problems should NOT attempt to lift them.
Physical ability and fatigue	Work can be physically demanding, with long shifts, much bending and lifting, sometimes of heavy animals. Volunteers should not work excessive hours or over a prolonged period – take regular breaks (including days off), eat and drink enough, and get enough sleep. Serious fatigue is unsafe, as it is likely to cause accidents.
Stress	Working in a situation where animals are in distress can be traumatic and can put pressure on anyone. Take regular breaks and talk to colleagues and supervisors.
Personal Protective Equipment (PPE)	Basic PPE consists of gloves, protective overalls and face/eye protection. Always wear PPE as directed, including suitable footwear, and make sure it is fastened/fitted correctly. Used /contaminated PPE should be disposed of properly. Refer to POSOW Oil Spill Volunteer Management Manual.
Clothing	The working environment can be hot or cold, and smelly. Wear clothes which you do not mind getting dirty and wear suitable clothing for the weather conditions (layering is ideal).
Injuries	Report all injuries or illnesses immediately, as they may compromise your effectiveness as a volunteer (Refer to POSOW Oil Spill Volunteer. Management Manual accident/near miss report technical sheet). First-aid services must be available on site.
Hygiene	Keep areas tidy, wash your hands properly and regularly, keep animal activities separate from human activities. No smoking, eating or drinking is allowed when working with sea turtles. Do not wear rings or bracelets.
Stay alert	Keep up to date with all written information and notices issued by supervisory staff. Follow instructions and listen carefully to briefings – they are for your own safety. Always use your common sense: health and safety is everyone's responsibility, including you and those around you.

14.2 Health and safety working with sea turtles

Sea turtles are not fast animals on land and will generally not turn around quickly to bite. Still, they can inflict very serious injuries if handled without care or by inexperienced persons. By far the most dangerous part of a sea turtle is the beak, which is extremely strong and sharp, and can inflict serious bites. This is easily avoidable by never touching a turtle around the head or neck unless you are an experienced handler. Turtles can only turn their head enough to bite as far back as their front flippers: as long as you keep your hands behind the front flippers, or on the carapace, you will be safe.

Their long front flippers and sharp claws may also cause injuries, especially in large animals, which are very strong. To avoid this, keep the animal's body (not the head!) as close to your body as possible. Be also aware of the barnacles that might be present on the carapace, especially in loggerhead sea turtles (Caretta caretta), and which can easily scratch and cut bare skin. Turtles' weight is another problem when handling these animals: in general, adult turtles in the Mediterranean Sea will weigh up to 70-80 kg but some may be heavier. Also beware of oiled turtles, which may be very slippery, complicating their safe handling. Refer to Appendix III for complete details of how to safely handle a sea turtle depending on its size.

14.3 Health and safety on the oiled shoreline

Search and collection require responders to go out along the shoreline to find oiled turtles, pick them up and put them into containers to be taken to a rehabilitation facility. This activity exposes these responders to a number of risks related to the capture and handling of sea turtles, all of which are potentially







Fig 7. Open beak of a loggerhead sea turtle. Note the serrated sides of the top edge Fig 8a+b. Detail of the claws in both front and back flippers of a loggerhead sea turtle

dangerous and could cause serious injury. Search and collection could also be taking place at the same time as shoreline clean-up or assessment operations, adding to the level of activity on the beach and therefore the potential risks.

Table 4: Control measures of risks on the oiled shorline

Risks	Control measures	
Bites	NEVER touch a sea turtle around the head if no previous experience.	
Cuts and scratches from sharp claws, barnacles and edges of the carapace; bruises, cuts and abrasions from flippers. More serious injuries are possible when handling large and strong turtles	Handle the animal according to instructions. Do not handle animals on your own if not sure how. See "Search and collection of animals" and Appendix III for proper handling procedures.	
Back injury (lifting heavy animals)	When lifting, keep your knees bent and back straight, keep the load close to your body. Get help for heavier loads (above 15-25 kg depending on your physical capability – always check with national legislation).	
Skin allergy	Always wear gloves when handling oiled animals or equipment (if allergic to latex, use alternatives).	
Zoonotic diseases and parasites	Always wash your hands after handling a sea turtle, even if you were wearing gloves. Do not touch a turtle with your bare hands if you have an open wound – protect it with a dressing and wear gloves. Maintain separation and hygiene procedures (see below).	
Hyperthermia (including heat stress, heat stroke, sunburn)	Heat stress can occur in very hot/humid conditions, particularly when wearing non-breathable protective clothing. Wear a hat and sunglasses if in bright sun and apply sun cream. Take sufficient rest breaks (shaded areas or climate-controlled areas preferable) and drink fluids regularly.	
Hypothermia (cold exposure)	Wear warm clothing, ideally in several layers (together with PPE provided as necessary). Use gloves and a hat to avoid heat loss. Heated shelters/rest areas should be provided. Take regular breaks.	
Slips, trips and falls (cuts, breaks, concussion)	Be vigilant to potential hazards when moving around the shore- line, be careful on rocky/slippery surfaces. Suitable footwear should be required as part of PPE.	
Toxic fumes (early on when oil is still fresh, in confined spaces, etc.)	No smoking. If in doubt, do not enter an area where fumes are present. Supervisors should carry out gas monitoring activities and advise on which areas basic responders can enter.	
Drowning (including work on jetties and harbours)	If working in or near the water on slippery or rocky surfaces, a life jacket is recommended.	

Risks	Control measures
Unauthorised visitors (e.g., passers-by, media)	Be aware that persons not involved with the response may interfere or get in the way of your work. Use common sense to try and avoid accidents. Responders should not speak with the media – supervisors will advise on security and media arrangements.
Machinery/vehicles for shoreline clean-up	Stay aware of traffic and follow instructions given. Supervisors should advise which areas of the coastline responders can enter (check if in doubt).

I 4.4 Health and safety on a search and rescue vessel

Oiled animals may be found at sea. In order to document the effects of an oil spill and assist affected turtles, search and rescue vessels may be sent out to survey areas where sea turtles are known to be found and to collect as many oiled live and dead animals as possible. Working on a vessel entails certain extra risks on top of the ones mentioned before. Bear in mind that the captain of the vessel (however large or small the vessel is) is always in command of the whole crew, and his/her orders must always be followed.

Table 5: Control measures of risks on a search and rescue vessel

Risks	Control measures
Corneal (eye) sunburn	Out at sea you will be surrounded by surfaces reflecting the sun. Always have sunglasses and a hat with you, even in cloudy days.
Skin sunburn	The sun reflected by the sea surface, as well as the breeze, may multiply the burning effect of the sun. Always cover your skin or apply plenty of sunscreen.
Hypothermia (cold exposure)	The temperature at sea tends to be colder than the temperature on land: always take one more layer with you than you expect to need out at sea. Also, if possible, a windbreaker.
Seasickness	Take anti-sickness tablets at least half an hour before leaving the harbour if you suffer from seasickness.
Slips, trips and falls	These are important risks on a vessel, especially if the sea is rough. Always follow the captain's instructions and do not leave the cabin unless specifically allowed to do so. Always hold on to the rails when walking outside. In general, stay out of the way if you are not working. Wear a lifejacket on deck, as required.
Machinery on the vessel	Stay aware of any operation happening on the vessel and always follow the captain's and crew's instructions. Stay out of the way if you are not working.





Fig 9. Provide proper waste disposal

Fig 10. Cleaning a juvenile loggerhead sea turtle

14.5 Health and safety in a rehabilitation facility

A sea turtle rehabilitation facility can be a complex and hectic working environment with many people and animals. It is important that sections are recognised in the facility, and each section is overseen by experienced staff member who also oversees and monitors health and safety issues.

Table 6: Control measures of risks in a rehabilitation facility

Risks	Control measures
Bites	NEVER touch a sea turtle around the head if no previous experience.
Cuts and scratches from sharp claws, barnacles and edges of the carapace; bruises from flippers, which may turn into more serious injuries if large and strong turtles	Handle the animal according to instructions. Do not handle animals on your own if not sure how. See "Search and collection of animals" and Appendix III for proper handling procedures.
Back injury (lifting heavy animals)	When lifting, keep your knees bent and back straight, keep the load close to your body. Get help for heavier loads (above 15-25 kg depending on your physical capability – always check with national legislation).
Skin irritation and allergy	Always wear gloves when handling oiled animals or equipment (if allergic to latex, use alternatives).
Zoonotic diseases and parasites	Always wash your hands after handling a sea turtle, even if you were wearing gloves. Do not touch a turtle with your bare hands if you have an open wound – wear gloves. Maintain separation and hygiene procedures (see below).

Risks	Control measures
Slips, trips and falls	Take care on wet/slippery floors and wear footwear with a good grip. Walk, don't run.
Chemical spillages and exposure to fumes	Clean up spills as soon as possible (check information on packaging or data sheets for correct procedure). Good ventilation is important.
Injuries from medical equipment (needles, syringes)	Basic responders should not be using needles (used by trained personnel only or under veterinary supervision) but be aware of sharps when cleaning or assisting others. Dispose of used equipment properly and safely.
Electrical injury and thermal burns	Take care when operating electrical equipment in a facility where water is being used continuously. Seek first-aid for skin burns. Supervisors should ensure that fire extinguishers (suitable for all types of fire) are available.



Fig 11. Sea turtle tanks at the Lampedusa sea turtle rescue centre

I 4.6 Facility: health and safety by design

Health and safety of animals in care

To prevent disease transmission, and because sea turtles (especially loggerheads) tend to be aggressive to each other in small places, animals should be separated and if possible housed individually. Oiled and clean animals should be kept in separate areas. Keep a separate set of clean and dirty (oil contaminated) equipment to avoid recontaminating cleaned animals. Disinfectants and sterilisers should be used according to manufacturers' recommendations as well local/national regulations.

Separate animal housing from staff facilities

Kitchen facilities, eating areas and those use for relaxation by responders or visitors must be kept separate from animal areas. There must be no common equipment between animals and humans e.g., towels, blankets, knives, forks, spoons, electrical appliances must not be shared. Do not eat or drink in the animal areas.

General hygiene in the facility

Keep areas as clean and tidy as possible without causing significant additional disturbance to animals in care. Put all tools and equipment away cleaned and ready for their next use and keep them in designated places. Report any damaged equipment or tools at the first opportunity.

Hand washing routines

Frequent and efficient hand washing is essential when working with sea turtles – whether you have been wearing gloves or not. Especially so when working with turtles housed in tanks, as the water is contaminated with their faeces. Wash your hands with soap between tasks, before and after preparing animal food, and before eating food or leaving the premises/site.

Signposting

It is extremely beneficial to provide signposts (do's, don'ts) everywhere in the facility to remind responders of the health and safety regime.





Fig 12. Signs can encourage better hygiene



I 5. Patrolling nesting beaches in the breeding season

Working on a nesting beach is a demanding activity, as it will require spending many hours on the beach at night and walking long distances, sometimes in bad weather. There are a lot of data available on sea turtle nesting in Europe, and most nesting beaches already have patrol, monitoring and research programmes in place, so experts or expert organisations will already be present. Following an oil spill incident, they will have to ramp up their activities, which will need a larger work force. Basic responders can contribute by patrolling the beach looking for nesting females, marking new nests and collecting data, and marking and assessing nesting females. Basic responders will always work under the direct supervision of an experienced sea turtle expert or trained responder.

If an oil spill threatens a sea turtle nesting beach, every effort should be made to prevent the oil impacting the beach by the use, as appropriate, of:

- Booms
- Skimmers
- Dispersants

If, despite such efforts, oil does impact the beach, activities depend on the time of year, i.e. is the oiling incident outside or within the sea turtle nesting season.

I 5.1 Oil impacting a beach outside the sea turtle nesting season

Every effort should be made to complete clean-up procedures before the commencement of the breeding season. Sea turtle experts should advise on the clean-up activities to ensure minimal impact on the nesting areas:

- Avoiding the impaction of sand by heavy vehicles in areas where sea turtles dig nests
- Any oiled sea turtle coming ashore on a nesting beach outside the breeding season should be considered stranded (see below)

The nesting season of both green and loggerhead turtles starts in May and continues till the end of August, with a peak in June and July. Hatching of the eggs will start after about 60 days of incubation (depending on incubation temperatures), so hatchlings can be expected to emerge from the nests by July and continue to do so until October. Accurate historical data for the exact location should be available, along with reports from any ongoing monitoring activities on site, to aid decision making.

I 5.2 Oil impacting a beach during the sea turtle nesting season

I 5.2.1 Protection of nesting females

If nesting has commenced there are a number of intervention options:

Prevention of contamination of sea turtles on the shoreline

It may be possible to use booms to prevent sea turtles coming ashore on the most contaminated parts of the shoreline, and thus becoming heavily oiled.

Protection of nesting females

Nesting females may become oiled either as a consequence of encountering oil at sea or while crawling through contaminated areas on the nesting beach.

Most sea turtles come on shore to nest at night, so during the day few encounters with nesting females are expected. Females coming on shore during the day should be carefully examined for signs of distress, in which case they should be treated as stranded (see below).

Response at night enables females to be observed and, where necessary, treated, and an accurate location of their nest to be recorded. Response activities can be coordinated with any pre-existing active female tagging operations.

Oil may be pre-emptively removed from more heavily oiled females to reduce their exposure, after they have laid their clutch:

- If there are rehabilitation facilities nearby, badly oiled adult females may be taken to the facility for primary treatment after they have laid their clutch. If the turtle is in good condition, she should be released again over the next few days to continue her nesting cycle.
- If there is no facility within 4 hours' drive, due to the large size of nesting females and the potential for unintended consequences resulting from disruption of their reproductive cycle, further intervention should only be considered if oiled females are unable return to the water on their own and are thus considered stranded.
- Oil can be removed from females in situ using oil-absorbent pads and cloths, after egg laying and before allowing them to return to the sea.
- Turtles which become oiled when hauling out to nest on an oiled shoreline
 can be cleaned in situ or in a nearby rescue centre, then moved to a clean
 location and released to prevent them becoming re-oiled as they re-enter
 the sea through the oil. Hopefully, in the two weeks before she returns to
 nest again, the shoreline will have been cleaned.

I 5.2.2 Protecting of eggs in situ

1. Effects of clean-up activities on sea turtle nesting should be minimized.

• In addition to the measures above, night activities should be kept to a minimum and the use of artificial light avoided. Any necessary lights should be shielded to illuminate only the working area and avoid light contamination of the rest of the beach.

2. All nests should be clearly marked to prevent beach clean-up activities from harming them, e.g.:

- sand compaction by vehicles or increased human presence,
- sand sifting,
- removal of beach sand/oil.





Fig 13. Loggerhead turtle (Caretta caretta) track: alternating gait, no tail drag mark, and track width typically ranging from 70 to 124 cm (mean 94 cm)

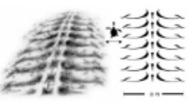




Fig 14. Green turtle (Chelonia mydas) track: simultaneous limb movement, a center drag mark from the tail, and track width typically ranging from 95 to 144 cm (mean 119 cm)

Identification of existing nests

• Ideally these will have already been identified by ongoing beach monitoring activities. If not, turtle tracks on the beach (see above) may persist long enough to identify some nesting sites.

Identification of new nests

- Direct observation of sea turtle nesting by night monitoring patrols.
- If nesting activity is not observed, the location of a possible nest can be identified by a characteristic set of up – and downward turtle tracks on the beach.

Turtles cover and disguise their nest with lots of sand and generally the exact location of the nest is difficult to identify. In that situation, it is sufficient to provide an approximate location of the nest.



3. Protection of nests

Nest locations should be:

- Logged with a GPS position.
- Clearly marked by e.g., a flag or coloured tape, and prominently fenced or roped off.

Fig 15. Example of nest marking

15.2.3 Protection of hatchlings

If nests are due to hatch and a shoreline or immediate offshore area is contaminated, hatchlings can be intercepted, collected and released clear of the contamination.

- · Hatchling sea turtles generally emerge at night.
- · Many nests may emerge that have not been marked.
- Therefore, to protect emerging hatchlings monitoring will need to occur at night.

If the location of nests is accurately known, cages can be placed around the expected site of hatchling emergence. Cages must be monitored regularly. Basic responders will always work with sea turtle experts or specialist responders.

15.2.4 Protection of eggs and hatchlings ex situ

In some circumstances translocation of eggs from in situ nest sites to safe, unoiled locations may be necessary, e.g.:

- It is not possible to leave the nest in situ until hatching is expected, and intercept and release hatchlings at unoiled locations;
- Nests cannot be adequately protected from damage by beach clean-up operations.

Imperilled nests need to be moved by trained experts who may be assisted by basic turtle responders. At the relocation site, a new nest has to be dug. The depth of the nest depends on the species and falls within the range of 40-60 cm.

The eggs must be carefully placed (not thrown) into the new nest carefully. Timing is crucial and one broken egg may destroy the entire clutch. Relocating nests is therefore a rather precarious task and requires concentration and experience.





Fig 16a+b. Flexible roof gutter guard can be used to create a barrier or make cages to intercept hatchlings



Fig 17. Diagram of a sea turtle egg chamber, the opening is smaller than the actual chamber



I 6. Search and collection of stranded sea turtles at the shoreline

Search and collection are demanding activities, as they will require spending many hours on the beach and walking long distances, sometimes in bad weather. Apart from capturing live animals, basic responders can contribute by searching for dead animals, carrying collected animals or taking on other supporting tasks.

For the search and collection operation to be safe and effective, it needs to be well planned, and authorized by the authority in charge of the response. Safe access to beaches needs to be guaranteed and planned in such a way that wildlife activities do not disturb other shoreline response activities and vice versa.

An experienced field coordinator should supervise the work of the different field groups:

- Briefing of field teams: responders should always work in pairs as a minimum and be overseen by a supervisor;
- Organising the required vehicles for transportation:
- > Boats:
- > cars for responders;
- > vans for animal transportation, both live and dead (using vehicles on oiled beaches may make shoreline clean-up more difficult by spreading contamination or driving oil into the sand);
- PPE and all necessary safety and collection equipment;
- Gathering information from salvage, shoreline clean-up or assessment teams:
- Setting up decontamination zones to avoid secondary pollution
- > If no specific decontamination area has been designated, carry two Plastic bags with you and leave them at the exit area from the beach: as you leave, any oiled disposable PPE goes into one bag for hazardous waste disposal, and oiled boots go in the other for later use.

16.1 Live animals

A successful attempt to rescue and rehabilitate oiled animals starts with a quickly organised and effective search and collection operation. The faster a debilitated animal receives appropriate treatment in a rehabilitation centre, the better its chances of survival will be. Although search and collection are generally organised along the shoreline, in areas and seasons of the year when a large number of turtles is present, it may be recommended to carry out offshore operations by boat.



Fig 18. Oiled sea turtle rescued on a beach

I 6.1.1 Capturing a sea turtle on the beach

Sea turtles are slow and somewhat clumsy on land. Therefore, unlike birds, turtles stranded on the beach are relatively easy to capture. However, when a turtle is close to the water, it can quickly disappear into the sea.

- Approach the animal guietly from behind or the side. Using gloves, with one hand grab the front of the carapace just behind the head and with the other hand grab the rear end of the shell near the tail, or support the weight of the animal with the plastron on your forearm (refer to Appendix III for complete details). Place it in a large enough box for transport on the beach.
- For larger animals, always work with 2-4 people to lift the turtle and strap it in a harness or place it on a stretcher for transportation. Good lifting practices are essential to protect the safety of personnel.
- Turtles can be slippery, and more so when covered in oil, so ensure that the grips are firm and you do not drop the turtle. Keep the turtle pointed away from your body and away from other people. Turtles can bite, especially when stressed.

The following material should be carried on an oiled turtle search and rescue operation at the beach:

- GPS unit
- Camera
- Mobile phone or radio
- Adequate containers (depending on turtles' sizes expected in the area) to carry the animals back to the transport vehicle or the beach-head collection point
- Turtle harness or stretcher (if large animals are expected)
- Labels such as Tivek® wristbands
- Permanent marking pen
- Personal protection equipment (protective coverall and disposable gloves, close-toed shoes)
- Large plastic bags to collect dead turtles

Once captured, and depending on its size, you may be able to carry the turtle in your hands to the beach collection point or car, or you might need a container, or even a stretcher or a harness and four people for larger animals. Write crucial information in a label attached to each animal as indicated in the box 1.

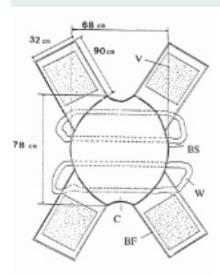




Fig 19 (left). Sea turtle harness designed to carry large animals • Fig 20 (right). Transport box for a medium-sized turtle, padded, with just enough space for the animal, and tall sides

I 6.1.2 Dead animals

The systematic collection of dead animals (even if not visibly oiled) from the shore or at sea is very important:

- Prevention of scavenging on oiled carcasses (foxes, dogs, ravens, birds of prey, gulls ...), causing secondary oil contamination.
- Prevention of duplicate reporting of impacted animals.
- Spill impact assessment: enables a reliable scientific assessment of the total mortality caused by the oil spill on different species of fauna. Bringing them into a laboratory will allow a more reliable determination of species, sex, cause of death, life stage and various biometrics. All these data will allow the mortality to be related to different breeding populations.
- Data collection in populations that are usually very difficult to access and sample can be achieved.
- In some countries systematic collection is needed for potential legal action/ compensation claims following an oil spill.

Box 1 – Oiled turtle labelling

Write on a label for each turtle found:

- Species (refer to Appendix II for a description of the main sea turtle species in Europe and the Mediterranean)
- Location collected (beach or latitude/longitude)
- Date and time collected
- Name and contact details of finder

Attach the label to the box where the animal will be transported. If not possible, attach it to the animal's front flipper, close to its body, snug but not tight.



Fig 21. Oiled dead, bloated green sea turtle stranded on a beach in Israel

Box 2 – How to know if a turtle is dead

It is not easy to be sure if a sea turtle is dead or still alive. Even if the animal does not move and appears to have no reflexes (for example, does not close the eyes when touched, or does not react to pain), this does not necessarily mean that it is dead. Sea turtles, especially if cold, can survive for hours without breathing, and their heart rate can go as slow as 1-2 beats per minute.

Only consider dead turtles those animals that are obviously decomposed:

- Rloated
- Parts of skin obviously missing
- Strong bad smell.

If at all in doubt, consider the animal alive and put it in a box for a specialist to confirm.

All animals should be checked by a specialist in order to confirm they are dead before they are taken to a freezer for storage or to necropsy!

Carcasses on the beach and at sea are sometimes completely covered in oil and it takes a trained eye to spot them (a hump in a slick of oil).

If a carcass is found:

- It is best practice to take a sample of oil from the carcass into a suitable container (see Appendix IV for instructions) before putting it into a plastic bag, so as not to contaminate the sample.
- Put the carcass into a plastic bag, one bag per carcass.
- Label bag see text box 3.
- If turtles are small, several individual bags with animals from the same beach can go into one large bag.
- During transport keep the carcasses as cool as possible, even using ice or a cold store if available.

As far as possible, all sea turtle bodies should be sampled and examined (necropsied), as this will give further information on the impact of the oil spill. If all carcasses cannot be necropsied in a timely manner, some may be frozen for later examination. For this, adequate freezer space must be available.

Short term identification and labelling may be required if multiple strandings have occurred and all carcasses cannot be moved from the beach immediately (see box 3). Each needs to be recorded and labelled/painted to avoid it being recorded twice. ID tags or a painted number may be used. The carcass should be moved to a location above the tide and preferably safe from scavengers for later collection.

Box 3 – **Dead turtles labelling**

Write on each individual or large bag containing dead animals:

- Number of carcasses
- Species included (if recognised)
- Flipper tags (if present)
- Location collected (beach or lat/long)
- Date and time collected
- · Name and contact details of finder



17. Search and collection of sea turtles at sea

Search and collection of sea turtles at sea should only be accomplished if there is suitable rehabilitation capacity in the area to look after rescued animals. If there is no suitable facility within reasonable transport distance, efforts should rather focus only on the stranded turtles, and leave free-swimming turtles to fare for themselves.

17.1 On board

Part I • Version 1.0, 2022

For search and capture operations of oiled sea turtles at sea to be effective, it is necessary to be able to sight turtles at some distance. The closer to sea level the observer's line of sight, the less effective the effort will be. Therefore, vessels with a raised helm (tower), a raised observation platform or a raised bow pulpit (platform above the sea) should be chosen. Also, an enclosed cabin or plenty of shade, and a cruising speed of at least 20 knots are preferred. For operating in inshore areas, smaller vessels of appropriate draught may be used, but should ideally also have a raised platform and ample shade.

Environmental conditions, such as sea state and water clarity, strongly influence sightability. More sightings are expected in calm conditions and shallower areas with good water clarity, and less with a higher sea state and deeper and/or turbid water.

Direct capture crews should consist of at least two individuals, one of them with experience capturing and handling turtles, in addition to the captain and a mate (if required). If large turtles are expected to be found, at least three animal handlers and an especially large and strong net will be needed to haul animals on board. A veterinarian also may be included in the team if spill conditions dictate the need for medical evaluation and treatment on board.

The following equipment should be carried aboard the search and collection vessel:

- GPS unit to allow the vessel tracks to be recorded and search effort. documented
- Camera to document every turtle found
- Satellite phone or radio connection
- Long handled dipnet (size of net depends on size of individuals in the area; length of handle depends on vessel)
- · Ropes and harnesses to bring large turtles on board
- · Multiple containers to carry animals back to harbour
- Disposable oil-absorbent pads to remove the excess oil from the body
- Clean towels or foam to use as base in the transport containers (or harness)
- Labels such as Tivek® wristbands
- Permanent marking pen
- Personal protection equipment (protective coverall and disposable gloves, close-toed shoes)
- Large plastic bags for dead animals

Search crews must always communicate closely with shore-based operations to ensure that ground transportation of animals is coordinated and rehabilitation facilities are prepared to receive oiled turtles.

Crews must be kept informed of other response activities (e.g., skimming, in situ burns, and dispersant application) in order to avoid conflict.

17.2 Turtle capture

Sea turtles are normally very agile and fast in the water, but oiled, debilitated animals will most probably be slow, or completely unable to swim and dive. Approach the turtle carefully with the vessel and be ready with a dip net. When the animal is inside the net, lift the net in a vertical position, especially when hauling heavier animals. Once on board, carefully remove the turtle from the net, untangling the flippers, always with your hands behind the animal's head.

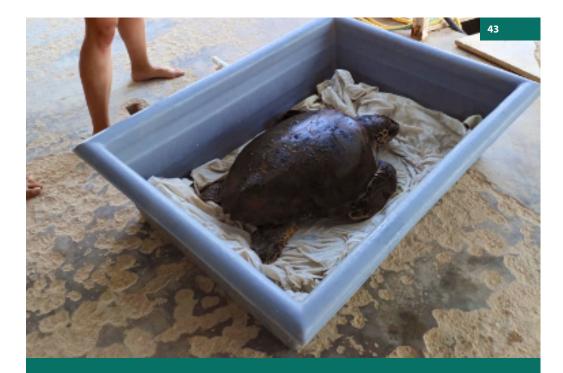
For transport on board back to harbour refer to Chapter "waiting for transport" and "animal transport". Remember to write crucial information on a label and attach to each animal rescued as indicated in box 1.





Fig 22. Detail of the correct location to place the label around the front flipper-snug, but never tight

Fig 23. Correct way to use the dipnet to haul a turtle on board, especially with heavy turtles



I 8. Waiting for transport

(Beachhead Collection Point / during trip back to harbour on rescue boat)

Sometimes it might be necessary to keep rescued turtles on the beach for a few hours before transport while collecting enough animals to fill a vehicle. If the number of animals and the time spent waiting on the beach warrants it, a Beachhead Collection Point should be established.

A Beachhead Collection Point is a simple structure at the beach, where animals can rest protected from the environment, and have part of the oil removed if easy. In practice, large vans, tents or buildings near the beach can serve as beachhead collection points. Turtles may stay a few hours here, but will never spend the night: they must be moved onto a rehabilitation facility by the end of the day.

Here, or on the rescue vessel during the trip back to port, rescued turtles will remain in their padded (with foam or towels) transport containers (read next chapter for possible container types), with the top partially covered by another towel. Sea turtles cannot thermoregulate and depend on ambient temperature. Ideal temperatures should mimic water and ambient temperatures where the animal was found, and should avoid extremes (not above 32°C and not below 15°C). If you do not have a temperature-controlled room, keep turtles in the shade during summer, and in the sun during winter (in a container covered with a towel, so that the animals are protected from the wind and get the heat, but not the direct sun), avoiding sudden temperature changes (not more than 2-3°C). If the turtle is severely hyperthermic (temperature over 32°C) try to quickly reduce its temperature at least by 2°C using water. In general, sprinkle some water over the turtle's carapace and head frequently to keep them wet if temperatures are greater than 24°C; place them over a wet towel in the box and cover their carapace with another wet towel. Do not use water or wet towels when keeping or transporting turtles at less than 24°C.

If turtles are heavily oiled (see box 4), you can start removing the thicker oil from the carapace, flippers and plastron. If you do so, remember to first take photographs of the animal prior to removal of any oil in order to document the extent of oiling. Write down in the label that you have removed part of the oil, and the oiling category of the animal before oil removal.

Use oil-absorbent pads to gently remove the excess oil. NEVER do this in the neck and head, as there is a high chance of getting bitten if you have never handled a turtle before. The head of sea turtles must only be handled by experienced people. Make sure you dispose of oiled pads as contaminated waste.

Box 4 – Oiling categories for sea turtles based on visual assessment

1 – minimally oiled: oil is limited to one region of the body or coverage

is very light;

2 – lightly oiled: a thin layer of oil covers several parts of the body

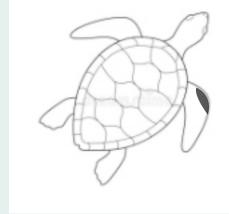
and thicker oil, if present, is focally distributed;

3 – moderately oiled: heavy layers of oil cover multiple parts of the body,

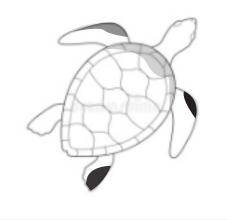
often with a generalized brown staining;

4 – heavily oiled: thick, tenacious oil diffusely covers the body.

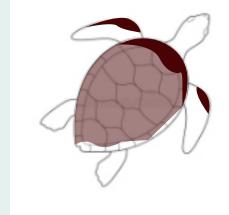
1 - minimally oiled



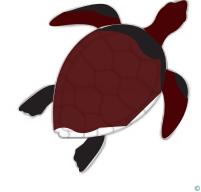
2 – lightly oiled



3 - moderately oiled



4 – heavily oiled



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19. Animal transport

Basic responders can fulfil an important task in animal transport. Driving safely between the location where animals are being collected and the rehabilitation facility, collecting and transferring animals and essential information are important responsibilities.

Once rescued, the faster an oiled turtle arrives at a rehabilitation facility and gets treated and washed, the better its chances of survival. Ideally, transport of oiled sea turtles should not be longer than 4 hours: if a longer transport time is required, a previous veterinary check should be carried out to assess the animals' clinical and hydration status.

19.1 Transport of juvenile and adult turtles

To reduce stress and further injury, proper transport containers should be used according to the animal's size:

- · hard-plastic or wooden boxes,
- children's plastic pools,
- · animal transport kennels,
- large coolers,
- · cardboard boxes for smaller animals.

Make sure you do not use materials that can be bitten off by the transported animals: e.g., do not use polystyrene-type boxes for large turtles. If an adequate container is not available for transport, place the turtle on a blanket with a damp towel over its head to keep it quiet.

Transport containers should be large enough to allow the turtle to lay down completely with normal flipper position and head extension (including raising the head to breathe), and ideally have tall walls to stop the animal from climbing out. The turtle should not be able to turn around. Containers should be padded (with clean towels or foam), and the top open or partially covered with another towel for good ventilation. Keep turtles over 10 cm carapace length separate: they are not social animals and will be aggressive to each other. Small individuals of 10 cm carapace length or less may be placed together in one box.



Each turtle should be marked with the required data in a waterproof label attached to its box or flipper (see text box 1). Ensure that these data are recorded at the time of transport.

Fig 24. Transport boxes may be covered to provide shade or to reduce external stimuli to the animals

In the transport vehicle, place the boxes on a solid, flat surface. Make sure there is space for ventilation, either in the top (uncovered container), or by the sides between cages. Boxes may be stacked on top of each other as long as they are strong enough for the animals they are holding. In this case, they need to have lateral holes for ventilation and enough space between them to allow air to circulate. If they might slide during transport, make sure they are secured.

A closed and well-ventilated vehicle is preferable, with a separate driver cabin to avoid exposing the driver to any oil fumes. Very large turtles might need to be transported in an open pick-up or flat-bed truck to enable loading and unloading.

Temperatures during transport should mimic water and ambient temperatures where the animal was found, and should avoid extremes (not above 32°C and not below 15°C): control the vehicle internal temperature to avoid severe and sudden temperature changes. If ambient temperatures are greater than 24°C, transported turtles can be cooled down by placing wet towels over the carapace or pouring water over the animals periodically.

Drive cautiously and try to avoid excessive sideways motion or sudden braking.

Contact the rehabilitation centre before transporting animals and give the driver's contact number, the number and sizes of turtles you are transporting and an estimated time of arrival, so that they can be prepared. The person that transports the animals is responsible for their welfare and safe arrival at the rehabilitation centre.

If transporting dead animals, keep bags with carcasses as cool as possible by placing them in coolers or covering them in ice.

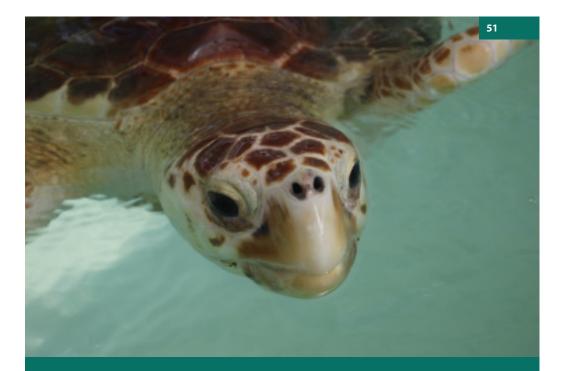


Fig 25. Transport boxes placed in a van for transport

I 9.2 Transport of hatchlings

If possible, containers for hatchlings should be large enough to comfortably accommodate the animals, but small enough to avoid excessive movements. Buckets or coolers can be used. Place a layer of damp beach sand in the container to stop hatchlings from desiccating during transport. Never transport turtles in water, as they might waste too much energy swimming.

Hatchling season happens during the warm weather: avoid excessive heat during transport, aiming to achieve the ambient night-time temperature in your area. If transport is long and you notice hatchlings getting dry you can spray them regularly with water from a hand spray bottle to keep them moist.



I 10. Animal arrival and reception

Basic responders can work at the reception area of a facility, and the task of receptionist is ideal for those who combine administrative skills, communication skills, and the ability to work consistently and systematically, sometimes under stressful conditions. The collection of accurate admission data on each turtle is essential to the rehabilitation process. Some manual handling (lifting and carrying of boxes containing turtles) may be required, depending on staffing of the reception area.

The reception area is where the transported turtles are handed over to the rehabilitation facility, which takes over the responsibility for the turtles' welfare from this point (see Appendix V for an overview of the oiled turtle rehabilitation process at the rehabilitation facility).

Receptionists must record the arrival of each turtle and ensure that all available information for each animal is gathered and recorded and that this information stays with that animal when it enters the facility. If no information is provided with the animal, the receptionist must gather as much of the essential information as possible from the transporter before he/she leaves (see Appendix VI). The transporter should also tell the receptionist whether the animals have already received any treatment (e.g., partial oil removal), which should be documented.



Fig 26. Proper data collection and transfer is very important

Proper data collection and transfer is very important as it helps in decision-making for further treatment and provides data for impact assessment. The information provided should be transferred to a medical record form for each individual animal (see Appendix VII).

The receptionist keeps a count of animals that have arrived, preferably on display (e.g., on a white board) and lines up the boxes for intake and clinical

exam. While waiting for the examination, turtles must be placed in a temperature-controlled, well ventilated and quiet spot in the reception area. Priority should be given to the animals that are most in need of assistance, i.e., the animals that travelled the furthest distance or that are reported weak or injured.

By the end of the day, the reception area must be empty: all animals should have moved through into the next stage of care. If the reception area is not empty, the receptionist should report this before leaving to the facility manager, who will assume responsibility for the welfare of any remaining animals. Labelled bags with dead sea turtles should be stored in freezers for impact assessment later on, without going through reception.



I 11. Intake and clinical exam

Intake and clinical exam are activities that must be performed by specialist responders or veterinarians. Basic responders can assist with administrative tasks and holding the animals for the exam.



Fig 27. Numbers painted on a sea turtle's carapace; this is an easy way to temporarily mark an animal at a rescue centre



Fig 28.Weighing a sea turtle

All animals accepted for treatment need to be registered as patients – the process called intake. During intake each animal receives a flipper band/painted mark in carapace with a unique patient number, and a record form in which the results of the first examination and subsequent treatment are documented.

Intake and clinical exam aim to ensure that:

- each animal accepted into the rehabilitation facility receives the treatment that best fits its needs, giving it the best chance of survival
- each animal has a record of all clinical findings and treatment given

Intake is carried out together with an initial clinical examination, ideally shortly after an animal's arrival, and under the supervision of a veterinarian or specialist responder. The following data are recorded on a form that stays with the animal throughout its journey through the facility:

- species
- size and weight
- body temperature
- · body condition
- behaviour
- illnesses or injuries

If not already documented, it may be necessary to collect photographs of the extent of fouling and/or samples of oil from the turtle e.g. as evidence for an environmental impact claim. If so, it is important that the samples are

collected and stored according to the correct protocol.

Most oil spills do not result in large numbers of oiled sea turtles requiring rehabilitation. However, there are some scenarios that can lead to many affected turtles requiring care:

- oiling of hatchlings;
- spills in densely populated nearshore foraging areas;
- or spills in which search and rescue vessels collect oiled turtles at sea.

If large numbers of sea turtles are presented at once, a triage process may be necessary.

I 11.1 Triage

When resources are limited, animals are prioritised according to their medical condition, treatment needs and probabilities of survival. This process is known as 'triage'.

For example, an animal that arrives in an extremely poor body condition and with severe injuries has a very poor prognosis i.e., will probably die even if it receives the best possible treatment. The welfare of this individual is best served by euthanasia, and not subjecting to additional suffering by attempting treatment with very little chance of success, especially bearing in mind that sea turtles take a very long time to die. Also, attempted treatment will tie up valuable resources that could be better used treating other individuals with a better prognosis.

The policy on triage and euthanasia will be set by the person in charge of Oiled Wildlife Response in consultation with experienced sea turtle experts and veterinarians, and always according to national legislation and with required permits, including for protected or endangered species. Using the guidance of the policy, specialist responders together with experienced sea turtle veterinarians make the difficult judgement on each individual at the intake exam.



I 12. The washing process

Oiled turtles, and especially their heads and mouths, should only be washed by people with experience in sea turtle handling – basic responders should never attempt to do this by themselves. Basic responders can assist in the washroom holding the turtles for washing or ensuring the materials needed are always ready.

Washing aims to remove all the oil from the skin, eyes, nostrils and mouth of affected turtles. This de-oiling is a crucial step in the rehabilitation process of a turtle, and it might need to be repeated several times if the oil is not completely removed on the first wash.

The main complication of removing the oil from a turtle is the inside of the mouth, a dangerous area that is difficult to access. This is why only experienced staff should wash oiled turtles.

The washing technique in sea turtles depends on the type of oil affecting the animal:

- In case of fluid oil, most of it can be removed using oil-absorbent pads or clean cloths. The remaining thin layer of oil can be washed using a cloth or soft sponge, dishwashing detergent (diluted at 2% with water) and warm water. Water temperature should range between 25° and 30°C and should remain approximately within 3°C of the animal's body temperature to avoid sudden changes.
- In case of dry or weathered oil or tar which is hard and tightly adhered to
 the skin, vegetable oil must be applied first and rubbed into the tar using a
 cloth or paper towels in order to soften it. Once all the tar is soft, wipe away
 as much as possible and wash the turtle as above using warm water and
 detergent.

In both cases the eyes and the mouth will be thoroughly cleaned using vegetable oil or mayonnaise, and then rinsed with saline (eyes) or clean water (mouth).

Washing a turtle is carried out by two people, one of whom (the assistant) holds the animal and the other (specialist responder) cleans the animal. Washing turtles



Fig 29. Oil in sea turtles is first removed with vegetable oil and cloths or paper towels

should not need very large amounts of water, but ensure that water is available on demand without interruption at a temperature of 25-30°C. The correct disposal of wastewater (water, oil and detergent) is essential; this is usually done by collecting all the wastewater in tanks to take away to an appropriate waste treatment facility.

Once the turtle has been washed and rinsed, even if not all oil has been removed (i.e., there is still very little weathered oil adhered to the carapace in some places), it can go to a tank with clean seawater.



I 13. General rehabilitation

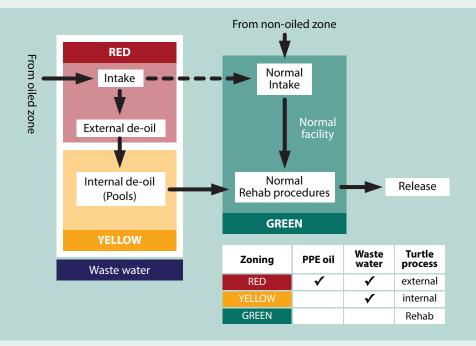
Basic responders are very useful in the general rehabilitation stage of turtles. Main tasks for basic responders are washing tanks, preparing food and feeding animals, weighting them and giving medication in the food as indicated by the veterinarian. Other tasks such as tube feeding can only be done by experienced staff, with the assistance of basic responders.

After washing, a general rehabilitation of between 2-4 weeks will ensure that animals are recovering well from the effects of oil, eliminating ingested oil and gaining the necessary strength to be released back to the wild.

I 13.1 Areas of the rehabilitation process

The rehabilitation process will be split into three areas:

- dirty/red (turtles not washed yet)
- yellow (turtles washed but still passing oil in faeces)
- green/clean (washed turtles in the final stage of rehabilitation)



Red Area

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Tanks housing oiled animals must empty their waters into an appropriate containment or water treatment system because oiled water is considered hazardous waste and must be disposed of according to applicable regulations. This may simply be a large, covered water storage tank that is taken away or its content pumped out for proper treatment. Staff and volunteers must wear full PPEs (oil resistant overall, boots, oil-resistant gloves; goggles depending on level of oiling and oil type) when handling or treating animals in this area, and equipment and materials need to be separated from those of clean areas.

Different staff should be assigned to work with dirty and with clean animals. If this is not practical due to a low number of animals in care, and corresponding low number of staff, work with the clean animals first, to avoid any cross-contamination of oil.

Yellow Area

Once a turtle is clean, it will still pass oil in its faeces, contaminating the tank's water. In sea turtles this may happen for 1-2 weeks. Here, water from the tanks still needs to be treated as toxic waste (or the oil trapped with an absorbent system, e.g. oil absorbent socks), and a lower-level PPE (at least oil-resistant gloves) needs to be worn when handling animals in their tanks or when cleaning tanks.

Green Area

Once animals are completely cleared of oil, they can be treated as normal turtles in rehabilitation, without any extra health and safety concerns or precautions.

Tanks will be large or small depending on the stage of rehabilitation (see table 7). In all cases, the inside surfaces of tanks should be non-abrasive, free of projections that could injure the animals and free of heavy metals or other contaminants. They should not contain any non-food items that could be ingested by the turtle, or any material that could be an entanglement hazard. Pipes, if any, should be positioned in a way that prevents the entrapment of the animals. Tanks should provide safe hiding places to reduce turtle stress. Tanks may be made of PCV, fiberglass, glass, concrete, etc.

Box 6 – Management of oiled water

Red area: consider not using filtration systems, since the oil might foul and affect them. Might be better to house turtles in smaller units with "dump and fill" systems, where oiled water can be disposed of properly in large containers.

Yellow area: just the surface layer of the water is oiled. Depending on the filtration system you have, consider adding oil-absorbent materials to the skimmers, or continue with "dump and fill" systems until the animal goes onto the green area.

Green area: no oil should be present in the water. Normal filtration systems may be used to keep a good water quality.

Whatever the tank, water of good quality is essential, and should be analysed at least weekly to confirm the following parameters are met:

- Clear water, enough at least to see the animal in any part of the tank
- · Salinity between 20 and 35parts per thousand
- Water pH between 7.2 and 8.5

Bear in mind that sea turtles are well adapted to life underwater. They can, and will, spend long times (over one hour, especially if the water temperature is low) submerged without needing to come out of the water to breath: do not panic! However, if in doubt, ask an advanced responder.

"Dump and Fill" Cleaning

If there is no recirculation system in place and the centre uses a "dump and fill" system, have a clean tank available nearby, so that the turtle can be quickly moved to it while the dirty tank is emptied and cleaned. Note that this system has its drawbacks: it may cause important differences in water temperature as tanks are emptied and re-filled, and it generally involves more work for care staff at the centre.

Since sea turtles depend on ambient water temperature it is essential to control both water and ambient temperature at the rescue centre, both in summer and winter. During the summer, make sure that at least 30-50% of each tank is under shade. In winter, and depending on the ambient temperatures, animals might need to be housed inside, in a temperature-controlled building and/or with water heaters. If you place water heaters in the animal's tank, be very careful that the animal cannot reach and chew them.

Preferred temperature of sea turtles in rehabilitation is generally between 20 and 30°C. However, when a turtle is first admitted to the rescue centre keep in mind the environmental conditions and sea water temperature of the area where it was found, and ensure the animal is not exposed to a thermal shock when introduced to its tank. Only allow a temperature difference of up to 3°C, and increase/decrease slowly, at a rate of around 3°C per day.

Table 7: **Providing care to sea turtles in rehabilitation** (pre- and post-wash)

Table 7.1 Tovidi	ng care to sea turties in renabil	tation (pre and post wash)
	Red and yellow areas	Green area
Proper housing	Sea turtles should be kept in a smaller, "dump and fill" tank with clean sea water, large enough that the animal is completely covered with water, can fully extend all flippers and can turn around. Water should be changed as needed to keep it clean, making sure oiled water goes to an oil/water separation system and is disposed of correctly.	Sea turtles should be kept in a tank with clean sea water, large enough that the animal can swim, turn around and dive immersing its full body. Water should be continuously cleaned, ideally through a filtration system, or changed as often as needed to keep it clean.
Body temperature	Sea turtles cannot thermoregulate, and therefore depend on the ambient and water temperature. Optimal temperature for a turtle in rehabilitation is around 20°-30°C but always bear in mind that their body temperature must not be changed abruptly: start with the ambient temperature where the animal was found, and slowly increase (or decrease) it at 2-3°C/day if necessary. Maintain ambient temperature with heaters or shade and ventilation, and water temperature with water heaters or shade.	
Dealing with stress	Sea turtles suffer from stress, although they are not very responsive and it is difficult to interpret. Stress has a negative influence on the immune system and slows the healing process and may prevent an animal from eating. Unnecessary disturbance should be avoided. Some effective ways to reduce stress are: Do not walk around the tank if not necessary. Provide turtles somewhere to hide the head, ensuring there is no risk of entrapment: a shaded area, a box, half a flowerpot, a small cave made with rocks or bricks, etc. Do not put two turtles together in a tank; if unavoidable, separate the two animals with a strong mesh. Minimize the handling of an animal: if possible, do all daily tasks (cleaning tank, weighing animal, treatment, tube-feeding) at the same time.	
Providing food	Provide enough good quality food, appropriate for the species and age; throw the food in the tank and leave the animal to eat. Remove the food after max. 1 hour if untouched, and discard. Provide food every day, at least once. Vets or experienced turtle rehabilitators will indicate how often and how much a turtle needs to eat depending on its health status.	
Rehydration	Due to lack of food and to diarrhoea caused by oil-damaged intestines, oiled sea turtles might be dehydrated. The level of dehydration can only be assessed with a blood sample. Severely dehydrated turtles will need IV or oral fluids (to be decided by a veterinarian and given only by experienced staff), but as soon as a turtle eats, oral rehydration fluids can be injected in the fish for extra hydration.	Healthy turtles will get their necessary hydration through the food they eat and the saltwater; no special measures are needed.

Food given to sea turtles should mimic their diet in the wild as much as possible, depending on species and age (see Appendix II). If possible, include a large selection of locally available fish and invertebrates, or/and different vegetables in case of green turtles. Cut food in small pieces if feeding small animals and remove all hard parts (bone and shells) for debilitated animals. Leave fish or invertebrates whole to feed strong turtles for an adequate mineral supplement. If an experienced sea turtle responder is not available to set feed regimes, start feeding approximately 2-5% of the turtle's bodyweight daily, and adapt quantities depending on the animal's behaviour. Remove uneaten food after 30-60 minutes, and discard. For each animal, record food eaten by subtracting food removed from food given (see Appendix VIII).

Food can be used fresh or stored frozen. In the latter case, defrost it in a fridge for several hours before feeding to animals. If really necessary, thaw frozen fish in cold water; never thaw it at room temperature, as it can enhance bacterial growth.

Food should be stored and prepared in a clean, designated kitchen space, separated from the staff kitchen. Tools and surfaces used to prepare food should be thoroughly cleaned with soap and water and dried after each use.

Animals should be regularly monitored during the rehabilitation process. All clinical, feeding (food consumption and/or preferences), and behavioural observations should be described in the medical records. Body weight should be monitored and recorded throughout rehabilitation, preferably once weekly (once every two days in case of hatchlings).

Box 7 – Comatose turtle care

Turtles that are very weak or comatose cannot be placed in a box or tank with water, as they will not be able to lift the head to breathe. However, they still need to be kept wet. Place a wet sponge or several wet towels covering the bottom of a box to avoid or reduce the appearance of pressure wounds in the animal's plastron. Place the animal on them, and cover its carapace with a wet towel, leaving the head free for the animal to breath comfortably. If possible, place these animals in a temperature-controlled room. Be aware that turtles kept in "dry-dock" cannot be fed, and will need to be tube-fed by an experienced sea turtle handler.



I 14. Release

The decision to release animals at the end of the rehabilitation process is an important one, and can only be taken by an experienced rehabilitator or vet. Once the decision is taken, basic responders can assist with preparing the animals for release, their transport to the release site and releasing them at the beach or into the water. Participating in the release events is a very rewarding experience and important for the moral of volunteers and staff to continue their hard work.

The ultimate goal of oiled sea turtle rehabilitation is to release de-oiled, healthy animals back into their natural environment, allowing them to continue their place and function in the ecosystem. Released turtles therefore must be fit for survival, as if they had never been oiled.

Strict criteria have been developed that a turtle must meet before it is released. The animal should:

- be 100% clean from oil
- demonstrate normal behaviour: it eats, dives and swims, is alert and strong
- have a normal weight for its size
- have no diseases or injuries
- have blood values within normal ranges for its species, age and time of year
- be marked with at least one official tag

The release site must be free of oil so that the risk of recontamination is minimised. Juvenile and adult turtles can be released at a beach, or from a boat offshore. Hatchlings are best released at a beach at night, letting them crawl on their own over a distance to the water.

Tagging the animals before their release is crucial, as it makes it possible to keep track of their individual survival. The exception is for hatchling and neonate turtles that are too small to mark with traditional tags. Most turtles will disappear into the sea and never be seen again, but some might be recaptured at a later stage, strand dead or alive at a beach, or appear at a nesting beach where scientists can report their tag number. These sightings provide vital information about whether rehabilitation has been successful in the long term and assist in improving the quality of the rehabilitation methodology that was applied. A sample of individuals released may be monitored more closely by satellite telemetry, to provide more detailed data on post-release behaviour and survival.





Fig 31. Releasing a sea turtle from a vessel

Fig 30. Sea turtles released on the beach

Useful references for more information

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Photo credits

Angela Martin: Fig 25, 38, 40

Blair Witherington/Florida Fish and Wildlife: chapter photo of I 4. Health and safety Callie Veelenturf/Bioko Marine Turtle Project: Fig 37

Connie Pletl: Fig 33

Dekamer: Fig 2, chapter photo of I 5. Patrolling nesting beaches in the breeding season

Florida Fish And Wildlife: Fig 13, 14 Fundación Oceanogràfic: Fig 30, 41

Georgia Department of Natural Resource: Fig 4, 6

IFAW: Fig 26

Jordi Sanchez/Submon: Fig 7, 43, chapter photos of I 11. Intake and clinical exam

Kiki Detmers/NIOZ: Fig 1

Lampedusa Sea Turtle Rescue Centre: Fig 28, chapter photos of I 6. Search and collection of stranded sea turtles at the shoreline, I 8. Waiting for transport, I 9. Animal transport,

I 13. General rehabilitation, I 14. Release, Appendices

Mariluz Parga/Submon: Fig 8a+b, 11, 20, 22, 23, 24, 27, 29, 31, 32, 34, 36, 42,

chapter photos of I 3. Tasks for basic responders in a sea turtle response, I 7. Search and collection of sea turtles at sea, I 10. Animal arrival and reception, I 12. The washing process

Marjolijn Christianen: Fig 5, 35

nsbturtles.org: Fig 15 **PRO Bird:** Fig 44, 45

Sea Alarm Foundation (SAF): chapter photo of I.1 Introduction

Tristan Simpson: Fig 3

Uria Tamim/Israel Nature and Parks Authority: Fig 18

Wildlife Rescue Centre Ostend: Fig 9

Yaniv Levy/Israel Nature and Parks Authority: Fig 10, 21, chapter photo of I 2. Oil spill response considerations for sea turtles



Appendices

Appendix I. Sea turtle life stages and habitat use

Sea turtle life history

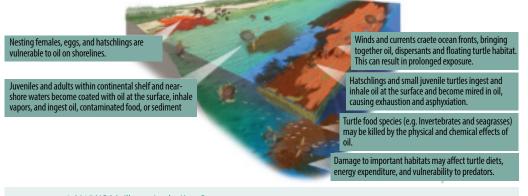
Sea turtles are long-lived and have complex life history traits that can vary substantially depending on species and on the geographic location of a population. However, the life cycles of loggerhead and green turtles in the Mediterranean are broadly similar.

Sea turtles are sexually mature at 30 to 50 years of age. Courtship and mating take place at mating areas. The nesting season of both green and loggerhead turtles starts in May and continues till the end of August, with a peak in June and July. Females will crawl up the beach at night, dig a nest, and then lay a clutch of 90-125 eggs, which they cover with sand once finished laying. Turtles may lay between 3-9 clutches of eggs throughout the nesting season with about 15-day intervals. Loggerheads on average lay fewer clutches (between 1-7) but with slightly more eggs.

Green turtles usually return to breed every 2-6 years, while loggerhead turtles have shorter interbreeding periods.

It takes approximately 55 days for the eggs to hatch. Both incubation period length and the sex ratio of hatchlings are determined by the temperature of the nest.

When hatchlings emerge from the nest, they instantly make for the sea and swim towards the open ocean. After about 5 years, when the juvenile turtles reach sizes between 30 to 40 cm Curved Carapace Length (CCL), they will settle in the developmental habitat, in shallow habitat near the coast. Generally, this area will become the turtle's residential foraging habitat for the rest of its life, except when they migrate to reproduce at their natal beach.



Appendix II. Species of sea turtles in European and Mediterranean waters

Three species of sea turtles are commonly present and reported in European waters: the loggerhead (Caretta caretta), the green (Chelonia mydas), and the leatherback (Dermochelys coriacea) sea turtles. They are easily distinguishable by their physical appearance, their general body colour, and the scales on their head. For the successful rehabilitation of these oiled turtles, it is essential to have a strong understanding of their husbandry needs in captivity and of their veterinary care.

Loggerhead turtle (Caretta caretta)

By far the most common sea turtle species in Europe and the Mediterranean Sea, it will most probably be the main affected species during an oil spill. With nesting areas in the Eastern Mediterranean Sea (although in the past years a growing number of nests have been reported in the Western Mediterranean), loggerhead populations range across all of the Mediterranean Sea and Macaronesian region. This species can also be sighted in front of the Portuguese and Cantabric coasts, although less frequently. Depending on their life stage and on the area, loggerhead sea turtles will be using coastal or pelagic areas. Loggerhead turtles in the

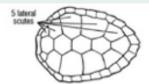


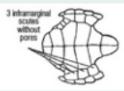
Fig 32. Loggerhead turtle

Mediterranean basin may come from Mediterranean or from American populations; those found in European Atlantic waters are from American and African populations.

Physical characteristics: Loggerhead sea turtles have a hard shell (carapace) with colours varying from reddish to dark brown. Their belly (plastron) is brown in small juveniles but turms creamy yellow in larger juveniles and adults. They have a large, broad head, with strong jaws to crush the shells of the crustaceans they eat. Adults may weight up to 100-150 kg, and have carapace lengths of up to 1 meter.







Wyneken, J. 2001. The anatomy of sea turtles. Illustrations by Dawn Witherington

Main distinctive feature to differentiate loggerhead turtles from green turtles: large and wide head with at least 4 prefrontal scutes (between the nose and the eyes). They also have 5 pairs of lateral scutes.

Rehabilitation considerations:

Both juveniles and adults are rather aggressive:

- keep individuals separate, if possible, as they will fight
- be very careful when handling

Adults are very large and heavy.

Diet: Varied diet with molluscs, crustaceans and some fish, if possible full (with bones and/or shells).

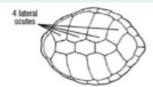


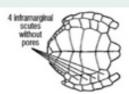


Fig 33. Loggerhead turtle

Fig 34. Head of a loggerhead sea turtle. Note the pre-frontal scutes (in the yellow circle) – this individual has 6 scutes







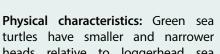
Wyneken, J. 2001. The anatomy of sea turtles. Illustrations by Dawn Witherington.

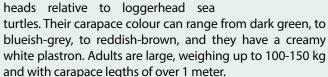
Green turtle (Chelonia mydas)

The second most common species in Europe and the Mediterranean, green turtles are usually seen in the Eastern Mediterranean, where they

Fig 35. Green turtle

breed, and very rarely reach the Western Mediterranean. African, and occasionally American specimens can also be seen in the coastal waters of the Canary Islands. Larger juveniles (above ~35cm of length) and adults tend to be coastal animals, feeding on sea grass or algae which grow in shallow waters.





Main distinctive feature to differentiate green turtles from loggerhead turtle: narrow head with only two prefrontal scutes on the head. They have a slightly rounder looking carapace with 4 pairs of lateral scutes.

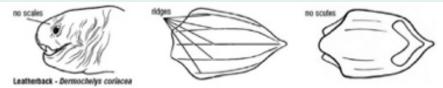
Rehabilitation considerations: Green turtles tend to be much calmer than loggerhead turtles and less aggressive.



Fig 36. Head of a green turtle. Note the pre-frontal scutes (in the yellow circle) – this individual has 2 scutes

Adults are very large and heavy.

Diet: Their diet is rather specific: they are omnivores in younger life stages but turn herbivorous – seagrasses and algae – in their larger juvenile and adult stages. Apparently, some turtles show a preference for seagrasses, and others for algae. When working with green turtles try to reduce high protein seafood diet to a minimum, so as not to alter their gut microbial communities.



Wyneken, J. 2001. The anatomy of sea turtles. Illustrations by Dawn Witherington.

Leatherback turtle (Dermochelys coriacea)

The largest of all sea turtles, leatherback sea turtles are pelagic animals, feeding on jellyfishes, although they have been reported to eat squid and octopus, amongst others. They are better prepared against cold temperatures than other species, and therefore can be seen in high latitudes, as far north as the British Isles. They spend most of their time offshore, using the entire water column. As a result, they are very difficult to detect and unlikely to strand or be captured during a spill.

Physical characteristics: Leatherback turtles are black, with white spots all over their body and flippers. The carapace is leathery, with seven prominent longitudinal ridges. Adults are enormous, reaching over half a ton of weight and 1.7m carapace length.

Rehabilitation considerations: If an oiled leatherback turtle is found alive, it will strongly complicate the rehabilitation process due to its large size,



Fig 37. Leatherback turtle at a beach in Bioko, Africa

specific ecological requirements (deep-divers and long-distance migrators) and very specialized diet. This species should only be rehabilitated in specialized facilities and with trained and experienced staff, which do not exist in Europe. If a leatherback sea turtle strands oiled on a beach, the recommendation can only be to treat it *in situ* as well as possible, and return it to sea.

For further reading on sea turtle species and biology refer to "The Biology of Sea Turtles, Volumes I, II (edited by Lutz et al. 1997 and 2002) and volume III (edited by Wyneken et al. 2013)

Appendix III. How to handle a sea turtle

Sea turtles are relatively easy to handle and control, if you know how. Although slow when out of the water, they can inflict serious damage to inattentive handlers, especially with their strong beak. Mishandling techniques can also injure the animal, as well as keeping them incorrectly while waiting for transport to the rescue centre, especially in younger animals.

Safety issues when handling turtles

It is relatively easy to handle and carry a turtle by hand in a safe way for both handler and turtle, following some simple guidelines. The main rule: if you are not familiar with sea turtles, **never** get close to the beak. Sea turtle beaks are very strong and sharp, difficult to open if the animal does not cooperate. Only experienced responders should handle this area. Good news is, the beak cannot reach the area behind the front flippers, the carapace or the upper neck areas, all of which can be handled safely.

Be also aware of the claws that turtles may have in both front and rear flippers, depending on species. They are not very sharp but might cause scratches. Lastly, beware of flapping front flippers of large individuals: they are long and powerful, and may hit hard against the handler's body if not careful.

Turtles that can be handled by one person

The easiest way to handle small turtles is the "hamburger" way, holding the animal by both sides of the carapace. Your hands may get slashed by the flippers, but this is not a problem with smaller animals.

With larger animals, grab the carapace securely placing one hand just behind the head (turtles cannot reach that area with the beak) and the other one at the rear end. This is an easy way to hold the animal for a short time, for



Fig 38. The beak of sea turtles is serrated, powerful and very sharp –stay well away from it if not experienced with sea turtles



Fig 39. Some species have claws in the front and rear flippers



Fig 40. Holding a juvenile loggerhead the "hamburguer" way





Fig 42. Holding a medium-sized turtle by the front and back of the carapace

example to put an animal inside a container or in a tank. In large and heavy animal two persons can hold the carapace, one on each lateral.

If you need to carry the animal for a few minutes, or if it is heavy, place one hand holding the rear end of the carapace, and the other arm (your "strong" arm) under the animal's body, right behind the front flippers. Hold the animal against your body, with the flipper closer to you forced extended in front of your arm. The hand holding the rear end of the carapace effectively ensures that the turtle will not be able to push itself forward with its flipper against your body.

Turtles that need to be handled by two persons

If 2 people are needed to carry the turtle, use the last method explained. The second person, placed on the other side of the turtle's body and looking at person 1, extends both arms under the turtle's body, supporting its weight.

The person grabbing the rear of the carapace has control over the animal.

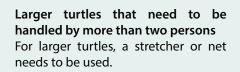




Fig 43. Two persons holding a medium-sized loggerhead turtle

Appendix IV.

Collecting external samples of oil or suspicious material

Instructions for making sampling kits using readily available materials (note: special laboratory-grade materials are preferred if only a small (trace) amount of oil is present)

Materials:

- 10 cm² non-sterile cotton gauze
- · Roll of aluminum foil
- Sealable plastic bag with label (do not use completely transparent bags as the label easily smears or is less legible)
- Clean metal forceps or wooden tongue depressors



Fig 44. Material for sampling kits

Instructions:

- 1. Put on clean disposable gloves. Remove an approximately 25-30 cm length of aluminum foil (a), taking care not to touch the dull side.
- 2. Using metal forceps or two wooden tongue depressors (like chopsticks), remove a square of gauze from the pack and place it onto the dull side of the foil (b). Fold the foil in half with the dull side, covering the gauze. Be careful not to touch any other surface with the gauze.
- 3. Fold over the sides of the foil to enclose the gauze on three sides (c).
- 4. Fold over the open end of the pouch to completely enclose the gauze (d). The gauze will be removed from this end for use. Place the pouch into a sealable plastic bag until needed.

Collection of external samples

- 5. After putting on the necessary personal protective equipment and taking photographs of the oil or suspect material, open the sample bag and foil and carefully grasp the gauze using clean metal forceps or disposable wooden tongue depressors (as with chopsticks).
- 6. In case of fluid oil, thoroughly swab the area of interest.
- 7. Make sure that the material has been clearly transferred onto the gauze. The gauze should be visibly discolored by the substance. Preferably, it should also contain accumulated solid material.
- 8. If using aluminum foil, place the gauze square into the premade foil pouch with the dull side inward. Fold the foil so that it completely encloses the

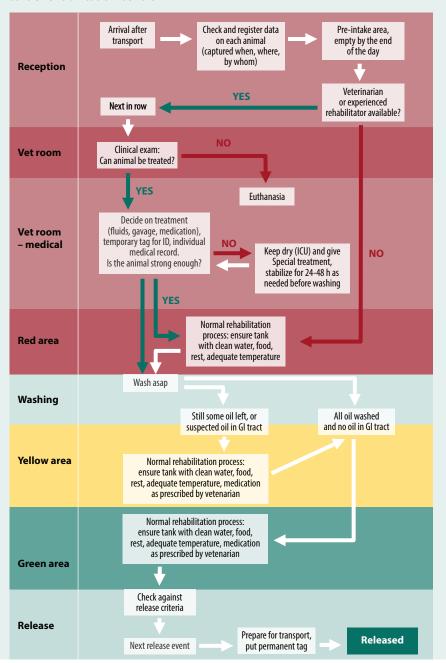
- gauze. Place the aluminum pouch into a sealable plastic bag. If using a glass jar, carefully place the gauze into the jar and close the lid.
- 9. In case of weathered oil, take a small sample with the wooden tongue depressor and place it into a folded piece of aluminium foil or into a glass jar.
- 10. Label the bag or jar (using indelible ink) with the animal identifier (stranding or field ID), species, and date.
- 11. Seal the bag or jar with evidence tape and sign and date the edge of the tape.
- 12. Keep the sample cool and transfer it to a -20°C (or colder) freezer as soon as possible.



Fig 45. Instruction fof making sampling kits

Appendix V. Overview of oiled turtle rehabilitation

The diagram below summarizes the flow of animals through an oiled sea turtle rehabilitation centre



Appendix VI. Live oiled sea turtle registration form

EUROWA EMpeso Oled Widtle Assistance
England

Live oiled sea turtle registration form Oil spill:

Registrered by							
Date + time of arrival							
Transported by							
Date + time of arrival							
Place collected							
Species							
Stranding label ID							
Intake number							

Appendix VII. Individual medical record/front page

Oil spill:		Centre: .			
Intake No.:	Internal ID.:		Official ID.:		
	Date collected:				Intake by:
First Examinatio	n				
Sex: female	male unknown Ve	et:	SCL/CCL (cm):	SCW/CCV	/ (cm):
Weight in kg:	Temp.	in C°:	Respiratory rate:		
Epibionta: none	small amount me	oderate amount	heavily encrusted		
Oiling category:		A	\wedge		
minimally oiled	☐ lightly oiled	Shade of	areas		
moderately oiled	heavily oiled				
Body condition:	(
1 emaciated	(/W/\			
	2 thin	5 0	0.0		
3 normal		ndition Index [W/S	○ ° ○ SCL³] x 10.000:		
0 0					
Behaviour: brig	4 robust or fat Body Cor	ethargic, depresse	ed nonresponsive		
Behaviour: brig	4 robust or fat Body Cor	ethargic, depresse	ed nonresponsive		
Behaviour: brig	4 robust or fat Body Cor	ethargic, depresse	ed nonresponsive		
Behaviour: brig Blood taken for:	4 robust or fat Body Cor	lethargic, depresse	ed nonresponsive		
Behaviour: brig Blood taken for: Injuries: Head:	4 robust or fat Body Cor	ethargic, depresse	ed nonresponsive	of eyes:	
Behaviour: brig Blood taken for: Injuries: Head: Carapace:	4 robust or fat Body Cor	ethargic, depresse	ed nonresponsive Fluorescein stain Flippers:	of eyes:	
Behaviour: brig Blood taken for: Injuries: Head: Carapace: Plastron:	4 robust or fat Body Cor	ethargic, depresse	ed nonresponsive Fluorescein stain Flippers:	of eyes:	
Behaviour: brig Blood taken for: Injuries: Head: Carapace: Plastron:	4 robust or fat Body Cor	ethargic, depresse	ed nonresponsive Fluorescein stain Flippers:	of eyes:	
Behaviour: brig Blood taken for: Injuries: Head: Carapace: Plastron:	4 robust or fat Body Cor	ethargic, depresse	ed nonresponsive Fluorescein stain Flippers:	of eyes:	
Behaviour: brig Blood taken for: Injuries: Head: Carapace: Plastron: Notes: Washing	4 robust or fat Body Cor	ethargic, depresse	ed nonresponsive	of eyes:	
Behaviour: brig Blood taken for: Injuries: Head: Carapace: Plastron: Notes: Washing Date:	4 robust or fat Body Cor	ethargic, depresse	ed nonresponsive	of eyes:	
Behaviour: brig Blood taken for: Injuries: Head: Carapace: Plastron: Notes: Washing Date:	4 robust or fat Body Cor ht, alert quite alert I	ethargic, depresse	ed nonresponsive	of eyes:	

Appendix VII. Individual medical record/back page

Individual medical record for turtles

Intake No.: Internal ID.: Official ID.:
Care and clinical history

Appendix VIII. Feeding log

	ROWA Oiled Wildlife Assistance									
	EURopean Oled Wildlife Assistance									
\(\sigma \)	Page of									
		Vitamins indicated:								
	Weight:	licated:								
	Weight:	Vitamins in								
	:									
	Internal ID: to	Medication indicatede in the food:	Feeding observations							
	Week:	ij	Feeding o							
		in the foo	Meds ok							
50		ndicatede	Vits ok							
Feeding log	Internal ID:	Medication ii	Date + time							

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This Manual forms part of a set of technical guidelines developed under the EUROWA framework.



Part A - SOP

This document – process of a Module mobilisation, procedures and job descriptions, tasks for the RP (entity requesting the EUROWA Module).







Part C – Facility Design Handbook Guidelines on equipment and supplies needed to set up and run a wildlife rehabilitation facility for oiled birds.

Part D – Equipment Handbook

Description of EUROWA's
equipment stockpile that can
be mobilised to complement
the capability or capacity
of a local wildlife response.





Part E – Response Concepts
Handbook for in the field/on-site
use, including key technical
concepts and guidelines.

Part F – Facility Management Handbook

How to set up and manage a wildlife rehabilitation centre as a conceptualised facility.





Part G – Basic Oiled Wildlife Response Manual

Guidelines on first-aid of oil affected wildlife, focussing on seabirds.



Guidelines for designing a system of data collection and analysis to make a reliable assessment of impact on wildlife populations.





Part I – Basic Oiled Sea Turtle Responder Manual Guidelines on first-aid

of oiled sea turtles

Part J – Advanced Oiled Sea Turtle Responder Manual Best practices for rehabilitation of oiled sea turtles.



