



BEST PRACTICE
TOOLKIT



4.0



TOOL 1: HOW DO YOU PERFORM?

This tool helps assess the quality, performance and safety of a shark and ray tourism operation against best practice. Use this tool to see how you perform, or to determine what kind of operator you want to be, and then use the flowchart to provide guidance for how to address any issues. Go through each criteria and determine which box best represents you. Make a note of your score and then add them up at the end to determine what sort of operator you are on the flowchart.⁷⁶

CRITERIA	POOR SCORE = 1	FAIR SCORE = 2	GOOD SCORE = 3	EXCELLENT SCORE = 4	SELF ASSESSMENT TOTAL SCORE
EDUCATION	Operator provides little, if any, information on the dive/swim and animals. No guidelines provided on animal interactions. No information given about the sharks, rays and their ecosystems.	Brief overview of diving/swimming conditions and animals. No guidelines provided on animal interactions. No information given about the sharks, rays and their ecosystems.	Basic briefing of diving/swimming conditions, animals, diver/swimmer safety. Basic information provided on animal interactions. Basic information given about sharks, rays and their ecosystems. Some signage provided.	Comprehensive briefing on diving/swimming conditions and diver safety with an emphasis on animal behavior. Detailed guidelines and related signage on animal interactions. In-depth information about sharks, rays and their ecosystems provided.	
IN-WATER SAFETY	A free-for-all with no organization. Operators make no effort to lead/communicate underwater/in the water.	Loose organization between divers/swimmers and operators. Operators remain relatively distant from divers/swimmers.	Good organization and communication between operator and divers/swimmers. Operators stay relatively close to divers/swimmers.	Effective strategy with strong organization and frequent communication with divers/swimmers. Entry and exit protocol enforced.	
ANIMAL TREATMENT	Operator frequently handles and manipulates animals and permits divers/swimmers to handle and touch animals.	Operator sometimes handles and manipulates animals; touching by divers/swimmers prohibited but is not enforced.	Operator rarely handles or manipulates animals; touching by divers/swimmers is prohibited and enforced.	Operator never handles or manipulates animals; touching by divers/swimmers is strictly prohibited and enforced.	
PARTICIPATING IN RESEARCH AND OUTREACH	Operator does not participate in research efforts.	Operator provides space on board vessel for researchers.	Operator provides space on board vessels for researchers and actively participates through collecting data and communicating results to passengers.	Operator provides space on board vessels for researchers and actively participates through collecting data and communicating results to passengers; collaborates with researchers on projects.	

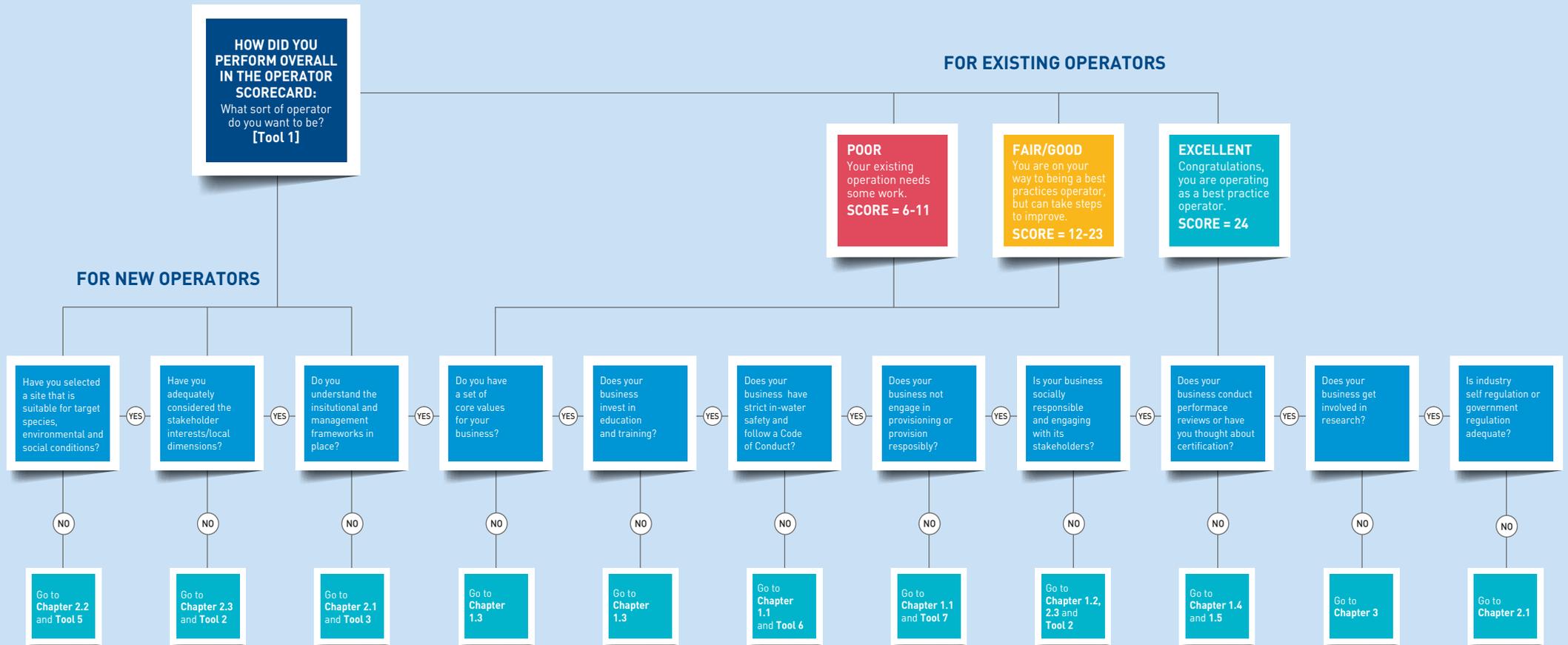


TOOL 1: HOW DO YOU PERFORM? cont.

CRITERIA	POOR SCORE = 1	FAIR SCORE = 2	GOOD SCORE = 3	EXCELLENT SCORE = 4	SELF ASSESSMENT TOTAL SCORE
ENVIRONMENTAL SUSTAINABILITY	<p>Operator makes no effort to use local or species appropriate food or lures.</p> <p>Gear used is high impact.</p> <p>Vessel is not fuel efficient.</p> <p>Green technology (eg, solar panels) is not incorporated into operations.</p> <p>Engine boat maintenance (avoiding oil spills etc.) rarely undertaken.</p> <p>No effort to reduce carbon footprint and improve waste management.</p> <p>Note - High impact is defined as: Coarse material that, if colliding with animals or people, can cause significant damage or injury. Metal and chain, as well as plastic and zip ties that can be ingested are all considered high impact.</p>	<p>Operator rarely uses local or species-appropriate food or lures.</p> <p>Gear used has moderate impact.</p> <p>Vessel is moderately fuel efficient.</p> <p>Some attempts to incorporate green technology into operations.</p> <p>Engine and boat maintenance (avoiding oil spills etc.) occasionally undertaken.</p> <p>Some effort to reduce carbon footprint and improve waste management (plastic use reduction, recycling and collection & disposal).</p>	<p>Operator does not provision; or operator uses local and species-appropriate food or lures.</p> <p>Gear used has moderate to low impact.</p> <p>Vessel is fuel efficient.</p> <p>Green technology incorporated into operations where possible.</p> <p>Engine and boat maintenance (avoiding oil spills etc.) regularly undertaken.</p> <p>Good effort to reduce carbon footprint and improve waste management (plastic use reduction, recycling and collection & disposal).</p>	<p>Operator does not provision, or does so under a responsible provisioning plan.</p> <p>Gear is specifically designed to be low impact.</p> <p>Vessel is certified fuel efficient and low emissions.</p> <p>Operator has obtained ecotourism accreditation.</p> <p>Green technology incorporated into operations.</p> <p>Engine and boat maintenance (avoiding oil spills, etc.) regularly undertaken.</p> <p>Extensive effort to reduce carbon footprint and improve waste management (plastic use reduction, recycling and collection & disposal).</p>	
SOCIAL RESPONSIBILITY	<p>Operation is not designed to benefit the conservation of resources or local communities and waters.</p> <p>No engagement with local community.</p>	<p>Operation shows some awareness of conservation of resources, animals, communities and waters.</p> <p>Minimal engagement with local community.</p>	<p>Operation demonstrates a conservation-based approach to resources, animals, communities and waters.</p> <p>Operator is engaged with local community.</p>	<p>Operation strongly demonstrates a clear conservation-based approach to resources, animals, communities and waters.</p> <p>Operator is engaged with local community and involves them in operations, e.g. through jobs, promoting local related businesses to customers.</p>	



TOOL 1: HOW DO YOU PERFORM? cont.



TOOL 2: BUILDING SOCIAL LICENSE

A social license to operate – in other words, community support – is essential for shark and ray tourism operators. The following checklist highlights some important areas to consider and potential actions to take.

AREA/GROUP	POTENTIAL ACTION	DESIRED OUTCOME	CHECKLIST
CUSTOMARY TENURE, TRADITIONAL KNOWLEDGE AND STEWARDSHIP			
CUSTOMARY TENURE OF COASTAL AND MARINE RESOURCES	Identify who the traditional owners are. Meet with traditional owners to discuss ownership and cultural heritage and (if relevant) any customary compensation that may be payable to them.	Mutual respect, understanding and consideration.	
TRADITIONAL KNOWLEDGE	Discuss local knowledge of target species population size, movements, significant grounds, etc. Share additional insights gained with elders.	Traditional knowledge is used, and seen to be used, to tailor tourism operations, for example to match suitable season and minimize impacts as much as possible in nursery or pupping grounds.	
STRONG STEWARDSHIP	Meet with leaders in the local community to understand the history and stewardship values and identify opportunities for the business to strengthen those values, rather than threaten or undermine them.	Mutual respect, understanding and consideration.	
FISHERS			
COMPETING FISHING ACTIVITIES	Meet with local fishers to discuss possible involvement in tourism and working together for mutual benefit. Consider the use of zoning to reduce any conflicts.	Local residents engage in tourism and boosting local economy – conflict over access and use of marine resources is avoided where possible and fishers and their communities see tangible benefits from tourism (whether directly or indirectly).	
DESTRUCTIVE FISHING PRACTICES	Build trusting relationship with fishermen and engage on best-practice fishing techniques that minimize damage to the environment. Seek support from local NGOs to lead on this. Help provide environmentally friendly fishing gear, when possible.	Destructive activities cease and fishermen adopt more eco-friendly practices. Relationship based on mutual respect and trust established.	



TOOL 2: BUILDING SOCIAL LICENSE cont.

AREA/GROUP	POTENTIAL ACTION	DESIRED OUTCOME	CHECKLIST
EDUCATION AND KNOWLEDGE SHARING			
ADULTS/RESIDENTS	Attend local community events and festivals and engage in marine educational activities.	Local residents gain understanding of diving activities, local resources and local threats.	
	Attend community meetings where locals can voice concerns or opinions.	Become an active part of the local community and address any issues.	
	Encourage signs at reef sites or offer classes to help locals identify marine species.	Greater community involvement and understanding.	
	Support and train local people to become divemasters/tour leaders.	Local residents engage in tourism and boosting local economy – conflict over access and use of marine resources is avoided where possible and fishers and their communities see tangible benefits from tourism (whether directly or indirectly).	
	Work with researchers to share results of scientific surveys with community and management authorities	Greater community involvement and understanding.	
SCHOOLS – CHILDREN/TEENAGERS/STUDENTS	Get involved in local school or university projects.	Young people learn about hands-on conservation.	
	Offer training courses for children, teenagers and students to become safe snorkelers and divers.	Employment opportunities for local young people, increased interest in operations and marine life.	
COMMUNITY AND ENVIRONMENT			
COMMUNITY CONTRIBUTION	Raise a contribution from customers for use in community programs (conservation, health care, facilities, sponsorships or scholarships).	Community has a stake in success of tourism operation, giving them an incentive to protect marine resources.	



TOOL 3: HOW WELL DO YOU KNOW YOUR MARKET AND LEGAL REQUIREMENTS?

New shark and ray tourism operators need to understand the market and legal requirements for an area they are looking to enter. Below are some key questions to answer.

KEY QUESTIONS	WHY ASK THIS QUESTION?	RESPONSE
WHAT RESEARCH HAS BEEN UNDERTAKEN ON THE MARKET, ITS POTENTIAL CAPACITY, THE COMPETITION, THE COMMUNITY PERCEPTION OF THE INDUSTRY, ETC.?	Researching and understanding the market provides essential baseline information from which to plan management and conservation strategies and build a sustainable business.	
WHAT NATIONAL, STATE OR REGIONAL/LOCAL LEGISLATION, POLICIES AND REGULATIONS ARE IN PLACE FOR SHARK AND RAY OPERATIONS?	Often several different authorities share responsibility for tourism. Understanding who is responsible for what – and who to go to for information on licensing and permitting, tourism levies, etc. – will make a big practical difference. It's also useful to prepare a checklist of key regulations and other requirements which you need to comply with.	
WHICH GOVERNMENT BODY OR LOCAL GROUP OVERSEES MONITORING AND ENFORCEMENT OF REGULATIONS? OR IS THE INDUSTRY SELF-REGULATED?	Regular consultation with the right agencies will help ensure they understand the purpose of the proposed venture. If the proposed venture is unregulated (or self-regulated), it's still advisable to consult appropriate agencies, such as those with responsibility for fisheries, environment and conservation, cultural heritage and tourism.	
IS THE TARGET SPECIES PROTECTED, ENDANGERED OR THREATENED? IF SO, ARE THERE ANY SPECIFIC REGULATIONS OR REQUIREMENTS TO FOLLOW?	In some cases the law prevents interaction with protected species, or only allows it under strict conditions. The legal status of the target species is fundamental to establishing an operation.	



TOOL 3: HOW WELL DO YOU KNOW YOUR MARKET AND LEGAL REQUIREMENTS? cont.

KEY QUESTIONS	WHY ASK THIS QUESTION?	RESPONSE
HOW ARE ISSUES OF NON-COMPLIANCE WITH REGULATIONS ADDRESSED?	Awareness of potential penalties for non-compliance with regulations can help focus efforts to avoid them.	
ARE THERE STRONG COMPETING INDUSTRIES SUCH AS COMMERCIAL OR RECREATIONAL FISHING IN THE AREA? IF SO, HOW WILL YOU CONSULT THESE GROUPS?	Having good relationships with other marine resource industries will help resolve any future disputes. Strong and regular communication is important. Explore whether any fishers currently participate in tourism enterprises: identifying inroads where they can get involved in a project may lead to improved outcomes.	
IS THERE AN MPA IN THE LOCAL AREA? DOES IT COVER THE SITE OF THE PROPOSED TOURISM VENTURE?	It's essential to understand the legal status of the site, and what activities are permitted, before deciding to make an investment.	
DOES YOUR BUSINESS PLAN INCLUDE THE TRIPLE BOTTOM LINE – THE ECONOMIC, ENVIRONMENTAL AND SOCIAL BENEFITS WHICH IT WILL GENERATE?	Sustainability makes good business sense. Environmental management, conservation considerations and social responsibility need to be part of any long-term business plan. The conservation of the target species itself – the focus of the business venture – needs to be fully addressed and integrated with the economic and social objectives.	



TOOL 3: HOW WELL DO YOU KNOW YOUR MARKET AND LEGAL REQUIREMENTS? cont.

KEY QUESTIONS	WHY ASK THIS QUESTION?	RESPONSE
<p>ARE ALL THE SKILLS NEEDED TO OPERATE THE VENTURE – E.G. BUSINESS MANAGEMENT, CUSTOMER SERVICE, BOAT AND GUIDING OPERATIONS, ETC. – IN PLACE?</p>	<p>A shark/ray tourism business requires a mix of skill sets beyond dive/snorkeling operations. Listing these and ensuring they can all be covered is essential.</p>	
<p>DOES THE INDUSTRY/VENTURE HAVE A SOCIAL LICENSE TO OPERATE IN THE AREA CHOSEN?</p>	<p>Successful operators work hard to build a good relationship with the local community and gain their trust, respect and support. This good relationship is paramount. It may also be useful to develop a clear communications and social media strategy with this in mind.</p>	
<p>WHAT LEVEL OF RISK IS ASSOCIATED WITH THE VENTURE AND HOW WILL IT BE MANAGED? WHAT INSURANCE WILL BE REQUIRED?</p>	<p>Shark and ray tourism involves liability risks for the operator as well as safety risks for the customers. It's highly likely that public liability insurance will be required for the risks involved, so this is an essential aspect of business planning. Raising customer awareness of the inherent risks is an important part of the educational experience, particularly around more aggressive species. This should be included in a safety plan which clearly sets out the protocols the venture must follow.</p>	



TOOL 4: GUIDANCE FOR MANAGEMENT AUTHORITIES

The following questions provide guidance for industry associations or government management authorities wishing to develop new or review existing legislation/ regulations and codes of conduct.

QUESTIONS	WHY ASK THIS QUESTION?	SUITABLE FOR INDUSTRY SELF-MONITORING	SUITABLE FOR GOVERNMENT REGULATION	RESPONSE
<p>1. IS THERE A NEED FOR GOVERNMENT REGULATION?</p> <ul style="list-style-type: none"> ■ IS THERE A CODE OF CONDUCT AND IS IT BEING FOLLOWED AND ENFORCED? ■ IS THERE A RISK TO STAFF OR PARTICIPANTS, THE ANIMALS OR THE ENVIRONMENT THAT IS NOT BEING RECOGNIZED OR ADDRESSED BY OPERATORS? ■ IS INDUSTRY UNABLE OR UNWILLING TO SELF-MONITOR? 	<p>As a general rule, shark and ray-based tourism can be self-monitoring, usually through a code of conduct. Government regulation is required only when there are failures within the industry – there is a risk either to the people, the animals or the environment and the risk is not being adequately addressed by the operators themselves.</p>	✓	✓	
<p>2. ARE THE POLICY OR REGULATIONS CLEAR AND PUBLICLY AVAILABLE?</p> <ul style="list-style-type: none"> ■ ARE THEY BASED ON THE BEST SCIENTIFIC EVIDENCE, AND ADAPTABLE AS NEW KNOWLEDGE BECOMES AVAILABLE? ■ ARE THEY ENFORCEABLE? 	<p>Ensuring clear boundaries from the beginning is important. License conditions should be clear, practical and enforceable. They should outline what is permitted, rather than focusing only on what is not, so it is up to the operator to show they are operating correctly. Making the policy a public document will also improve the accountability of individual operators in the eyes of the community.</p>		✓	



TOOL 4: GUIDANCE FOR MANAGEMENT AUTHORITIES cont.

QUESTIONS	WHY ASK THIS QUESTION?	SUITABLE FOR INDUSTRY SELF-MONITORING	SUITABLE FOR GOVERNMENT REGULATION	RESPONSE
3. IS THERE AN EFFECTIVE INDUSTRY ASSOCIATION TO WORK WITH, OR CAN YOU PLAY A ROLE IN ESTABLISHING ONE?	Having a single, independent point of contact for the industry makes decision-making and communication more effective.	✓	✓	
4. HOW ENGAGED ARE OPERATORS AND THE COMMUNITY IN THE DEVELOPMENT OF POLICIES OR A CODE OF CONDUCT?	Operator and community involvement in decision-making processes makes strong compliance more likely: collaboration and a sense of ownership are powerful factors.	✓	✓	
5. ARE LICENSE CONDITIONS CONSISTENT FOR ALL OPERATORS?	Inconsistent conditions will create difficult situations. Consistency also creates certainty if activities are scaled up. However, some flexibility in governance regimes may be needed as a situation changes.	✓	✓	
6. HOW IS CONFLICT MANAGED WITHIN THE INDUSTRY, AND WITH OTHER INDUSTRIES? CAN THE REGULATIONS PROMOTE A RESOLUTION PROCESS?	It's important to strike a fair balance between supporting the industry and acting as the regulator when community concerns are raised. Having a good relationship with other marine user groups and using spatial management to address industry conflicts are both important.	✓	✓	



TOOL 4: GUIDANCE FOR MANAGEMENT AUTHORITIES cont.

QUESTIONS	WHY ASK THIS QUESTION?	SUITABLE FOR INDUSTRY SELF-MONITORING	SUITABLE FOR GOVERNMENT REGULATION	RESPONSE
7. HOW IS INTERNAL GOVERNMENT CONFLICT MANAGED?	Having multiple departments involved in the regulation and management of shark and ray tourism can give rise to conflicts or inconsistencies. Establishing a cross-group steering committee that meets regularly to discuss issues and determine a unified response is an effective tool for ensuring smooth management.		✓	
8. IS THERE A STRONG SCIENTIFIC BASIS TO SUPPORT THE POLICY?	Don't underestimate the impact of politics on effective management of shark and ray tourism. Having a strong scientific basis for policy decisions, and being able to explain the scientific rationale for them to stakeholders, will help encourage acceptance of both fully validated and precautionary policies intended to protect target species and ecosystems.	✓	✓	
9. HOW IS SOCIAL LICENSE MANAGED?	This question is particularly important when provisioning is used and the local community has safety concerns, for example for cage diving and great white sharks. An effective public communications and awareness strategy may help strengthen the industry's social license.	✓	✓	



TOOL 4: GUIDANCE FOR MANAGEMENT AUTHORITIES cont.

QUESTIONS	WHY ASK THIS QUESTION?	SUITABLE FOR INDUSTRY SELF-MONITORING	SUITABLE FOR GOVERNMENT REGULATION	RESPONSE
<p>10. HOW WELL DO THE REGULATIONS BALANCE INDUSTRY INNOVATION AND GROWTH WITH CONSERVATION AND WELFARE OF THE SPECIES, MINIMIZING ENVIRONMENTAL IMPACT AND ENSURING COMMUNITY SAFETY? WHAT ARE THE MINIMUM STANDARDS REQUIRED FOR EACH ELEMENT TO BE EFFECTIVE, WHILE PROMOTING BEST PRACTICE?</p>	<p>Ensuring the regulations are based on the latest science and research will help in striking the appropriate balance. So too will consultation and communication with industry operators regarding their issues and aspirations.</p>	<p>✓</p>	<p>✓</p>	
<p>11. HOW WILL MANAGEMENT AND ENFORCEMENT BE FUNDED – FOR EXAMPLE THROUGH LICENSING FEES, COST RECOVERY, VISITOR LEVIES, ETC.?</p>	<p>There is no point having strict regulations or a code of conduct if they cannot be enforced. Where visitor levies are collected it's important these are 100% re-invested in strengthening management and enforcement in the industry, and in community development and conservation efforts.</p>	<p>✓</p>	<p>✓</p>	

TOOL 4: GUIDANCE FOR MANAGEMENT AUTHORITIES cont.

QUESTIONS	WHY ASK THIS QUESTION?	SUITABLE FOR INDUSTRY SELF-MONITORING	SUITABLE FOR GOVERNMENT REGULATION	RESPONSE
12. HOW TRANSPARENT IS THE COST OF MANAGEMENT TO THE INDUSTRY?	The more transparent the better: the industry and the community both need to understand how funds are invested.		✓	
13. HOW WILL THE POLICY OR CODE OF CONDUCT BE MONITORED AND ENFORCED? IS THERE BASELINE KNOWLEDGE? WHAT ARE THE KEY INDICATORS TO MONITOR IMPACTS AND COMPLIANCE?	Where possible, baseline data should be collected before operations begin to allow for an effective assessment of changes in behavior of the target animals or ecosystem health. Researchers can help develop indicators to suit the target species and operational circumstances.	✓	✓	
14. WHAT LEVEL OF COVERAGE WILL BE NEEDED TO MAKE MONITORING EFFECTIVE?	It's important to develop a scientific basis for determining the level of observer coverage needed to ensure compliance. Innovative, cost-effective methods can be used – for example, where government staff join trips as paying customers, without operator knowledge, to monitor activity. Cameras on board vessels (e-monitoring) and e-logbooks, as used in the fishing industry, can give good coverage of activities and drive individual operator accountability.	✓	✓	



TOOL 4: GUIDANCE FOR MANAGEMENT AUTHORITIES cont.

QUESTIONS	WHY ASK THIS QUESTION?	SUITABLE FOR INDUSTRY SELF-MONITORING	SUITABLE FOR GOVERNMENT REGULATION	RESPONSE
15. IS THERE AN ADEQUATE AND FUNDED SCIENTIFIC MONITORING PROGRAM SUPPORTING THE ONGOING ADAPTATION OF THE POLICY OR REGULATIONS?	Policies should be underpinned by sound, up-to-date science.	✓	✓	
16. WHAT FACTORS AFFECT THE LEVEL OF TOURISM ACTIVITY, AND ARE THERE BENCHMARKS FOR MEASURING IMPACT?	Having benchmarks to measure change helps understand impacts identified. Below are some factors that can be used to quantify the level of tourism activity.	✓	✓	
	FACTOR	BENCHMARK		
	Days when tourism activity occurred	Tourism activity took place on XX days		
	Vessels in operations	X vessels per license were allowed to operate		
	Businesses using burley or lures or attractants	X businesses were authorized and using burley or lures or attractants		
	Businesses conducting commercial shark/ray tourism	X businesses were authorized and operating		



TOOL 4: GUIDANCE FOR MANAGEMENT AUTHORITIES cont.

QUESTIONS	WHY ASK THIS QUESTION?	SUITABLE FOR INDUSTRY SELF-MONITORING	SUITABLE FOR GOVERNMENT REGULATION	RESPONSE
17. HOW WILL SOCIAL MEDIA RELATING TO SHARK AND RAY TOURISM, BOTH NEGATIVE AND POSITIVE, BE MANAGED?	Having a social media strategy is useful for proactive communication with key stakeholder groups as well as the general public. It's also useful for monitoring public sentiment on particular issues, and gives an opportunity to respond to public concerns.	✓	✓	
18. HOW CAN CONTINUOUS IMPROVEMENT IN THE INDUSTRY BE ENCOURAGED?	Best practice demands continuous improvement from operators and their staff. Providing ongoing training can encourage this, covering areas such as environmental impacts, safety, tourism operations, understanding the latest scientific research, etc.	✓	✓	
19. WHAT ROLE SHOULD OPERATORS PLAY IN EDUCATING TOURISTS ABOUT THE CONSERVATION AND MANAGEMENT OF THE TARGET SPECIES?	Having industry providing educational opportunities for customers can lead to improved community acceptance of sharks and rays. Education can also increase public support for marine conservation among locals and participating tourists.	✓	✓	



TOOL 5: SELECTING A SITE

The following checklist highlights important aspects for you to consider when selecting a site. The higher the number of yes answers, the more likely it is the site will be a suitable location.

KEY CONSIDERATIONS	YES	NO	NOT APPLICABLE
SPECIES-RELATED CONDITIONS			
ARE THE TARGET SHARKS AND/OR RAYS PRESENT REGULARLY AND PREDICTABLY?			
ARE THE SPECIES CONSISTENTLY SEEN IN CONSECUTIVE SEASONS OR YEARS?			
IS THE SITE IN AN AREA THAT IS NOT A MATING, PUPPING OR SHARK NURSERY GROUND? IT'S IMPORTANT TO TRY TO AVOID THESE AREAS SO AS NOT TO DISTURB THE ANIMALS.			
ENVIRONMENTAL CONDITIONS			
IS THERE EASY ACCESS TO THE DIVE SITE BY BOAT OR FROM LAND?			
IS THE WATER CLEAR ENOUGH TO ALLOW GOOD VIEWING OF THE ANIMALS?			
CAN THE HABITAT WITHSTAND IMPACT FROM THE OPERATION? FOR EXAMPLE, IS IT POSSIBLE TO ACCOMMODATE DIVERS OR CREATE A FEEDING ARENA WITH MINIMAL DAMAGE TO CORAL COVER?			
IS THE SITE RELATIVELY SHELTERED FROM BAD WEATHER OR STRONG CURRENTS THAT MAY IMPACT ON SAFETY AND ACCESS FOR CUSTOMERS?			

TOOL 5: SELECTING A SITE cont.

KEY CONSIDERATIONS	YES	NO	NOT APPLICABLE
SOCIO-ECONOMIC CONDITIONS			
IS THERE EASY ACCESS TO THE OPERATOR LOCATION FOR CUSTOMERS?			
ARE LOCAL FACILITIES (E.G., TRANSPORT, RESTAURANTS, HOTELS) AVAILABLE?			
ARE THERE OTHER TOURIST ACTIVITIES NEARBY? IF PROVISIONING PREDATORY SHARKS, ARE OPERATIONS WELL AWAY FROM POPULATION AND TOURISM CENTERS?			
IS THERE EASY EVACUATION AVAILABLE IF THERE ARE PROBLEMS (MEDICAL CARE, DECOMPRESSION CHAMBER ETC.)?			
ARE THERE OPPORTUNITIES FOR LOCAL RESIDENTS TO ENGAGE IN SHARK AND RAY-BASED TOURISM?			
IS THERE A LOCAL DESIRE WITHIN THE COMMUNITY TO CONSERVE MARINE RESOURCES?			
ARE OPERATIONS COMPATIBLE WITH LEVELS OF FISHING IN THE AREA?			
ARE TOURISTS IN THIS AREA WILLING TO PAY FOR DIVING/SNORKELING? CAN LOCAL TOURISTS AFFORD THE SAME AS INTERNATIONAL TOURISTS?			
IS THERE A LEGISLATIVE FRAMEWORK PROTECTING TARGET SPECIES?			
IS IT PRACTICAL TO ENFORCE REGULATIONS OR A CODE OF CONDUCT? IS SUCH ENFORCEMENT OCCURRING?			



TOOL 6: EXAMPLE CODES OF CONDUCT

Each shark and ray operation is unique. It's important to develop a code of conduct that reflects this uniqueness, while also considering the latest science and best practice. **The following are examples only, but they can help you create a tailored code of conduct.** We've also included examples of how a poster can be used to illustrate key points and some icons which may be useful for display material (p60).

WHALE SHARKS INTERACTION GUIDELINES

The following code of conduct is based on existing codes of conduct for swimming with whale sharks in Ningaloo Reef, Western Australia, as well as research studies.

- CODE OF CONDUCT
- DISPLAY SIGNAGE
- INTRODUCTORY BRIEF
- ENFORCEMENT
- NUMBER OF VESSELS
- NO SCUBA
- EXCLUSIVE CONTACT
- NO ACCESSORIES
- SPEED 8 KNOTS
- NO FEEDING
- NO HARASSING OR CHASING
- NO SUNSCREEN
- TIME IN PROXIMITY 90 MINS
- NO SCOOTERS OR JET SKIS
- NO FLASH PHOTOGRAPHY
- PHOTOGRAPHY
- MAX GROUP SIZE 10
- NO TOUCHING OR REINING
- NO SELFIES WITH ANIMALS

200 METERS EXCLUSIVE ZONE
30 METERS FROM HEAD
3 METERS FROM TAIL

BASKING SHARKS INTERACTION GUIDELINES

The following code of conduct is based on existing codes of conduct for boat users, kayakers, swimmers, divers and surfers interacting with basking sharks created by The Shark Trust (www.baskingsharks.org) and Fisheries and Oceans, Canada.

- CODE OF CONDUCT
- DISPLAY SIGNAGE
- INTRODUCTORY BRIEF
- ENFORCEMENT
- NUMBER OF VESSELS
- NO SCUBA
- EXCLUSIVE CONTACT
- NO ACCESSORIES
- SPEED 6 KNOTS
- NO FEEDING
- NO HARASSING OR CHASING
- NO SUNSCREEN
- TIME IN PROXIMITY 90 MINS
- NO TOUCHING OR REINING
- PHOTOGRAPHY

100 METERS EXCLUSIVE ZONE
10 METERS

SHARK CAGE DIVING INTERACTION GUIDELINES

The following code of conduct is based on existing codes of conduct for commercial great white shark cage diving in New Zealand, as well as the latest research.

- CODE OF CONDUCT
- DISPLAY SIGNAGE
- INTRODUCTORY BRIEF
- ENFORCEMENT
- NO TOUCHING OR REINING
- SCUBA
- NO FISHING
- NO ACCESSORIES
- SPEED 6 KNOTS
- LURES AND ATTRACTANTS
- NO SWIMMING
- NO SUNSCREEN
- TIME IN PROXIMITY 90 MINS
- CAGE RESTRICTIONS
- SHARK BEHAVIOR
- NO DECOYS

100 METERS EXCLUSIVE ZONE

REEF AND PELAGIC SHARKS INTERACTION GUIDELINES

The following Code of Conduct is based on an existing Code of Conduct for interacting with Grey Nurse Sharks off the eastern coast of Australia and research studies.†

- CODE OF CONDUCT
- DISPLAY SIGNAGE
- INTRODUCTORY BRIEF
- ENFORCEMENT
- NUMBER OF VESSELS
- NO ACCESSORIES
- EXCLUSIVE CONTACT
- NO ACCESSORIES
- NO HARASSING OR CHASING
- SCUBA
- NO UNDERWATER SCOOTER
- NO SUNSCREEN
- TIME IN PROXIMITY 90 MINS
- NO TOUCHING OR REINING
- NO FEEDING
- MAX GROUP SIZE 10

3 METERS EXCLUSIVE ZONE

STINGRAYS INTERACTION GUIDELINES

The following code of conduct is based on data and studies of wild stingray populations and how to best minimize tourist-related impacts.

- CODE OF CONDUCT
- DISPLAY SIGNAGE
- INTRODUCTORY BRIEF
- ENFORCEMENT
- NUMBER OF VESSELS
- NO SCUBA
- EXCLUSIVE CONTACT
- NO ACCESSORIES
- SPEED 8 KNOTS
- NO FEEDING
- NO TOUCHING OR REINING
- NO SUNSCREEN
- TIME IN PROXIMITY 90 MINS
- NO FLASH PHOTOGRAPHY
- NO SELFIES WITH ANIMALS

30 METERS EXCLUSIVE ZONE
3 METERS

MOBULID RAYS (MANTA AND DEVIL RAYS) INTERACTION GUIDELINES

The following code of conduct is based on the Manta Interaction Guidelines by the Manta Trust. It also reflects recent research studies.

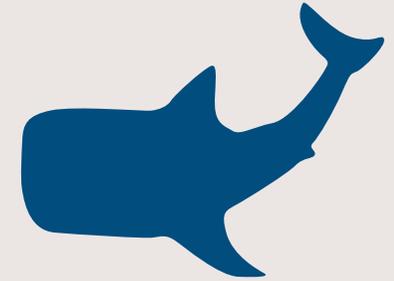
- CODE OF CONDUCT
- DISPLAY SIGNAGE
- INTRODUCTORY BRIEF
- ENFORCEMENT
- NUMBER OF VESSELS
- NO SCUBA
- EXCLUSIVE CONTACT
- NO ACCESSORIES
- SPEED 8 KNOTS
- SPEED 5 KNOTS
- NO TOWING
- NO SUNSCREEN
- TIME IN PROXIMITY 90 MINS
- NO TOUCHING OR REINING
- NO FEEDING
- MAX GROUP SIZE 10

10 METERS EXCLUSIVE ZONE
3 METERS

TOOL 6: SAMPLE ICONS

You may find the following icons useful in creating your own display material





TOOL 6: WHALE SHARKS example code of conduct

WHALE SHARKS

The following code of conduct is based on existing codes of conduct for swimming with whale sharks in Ningaloo Reef, Western Australia, as well as research studies⁷⁷

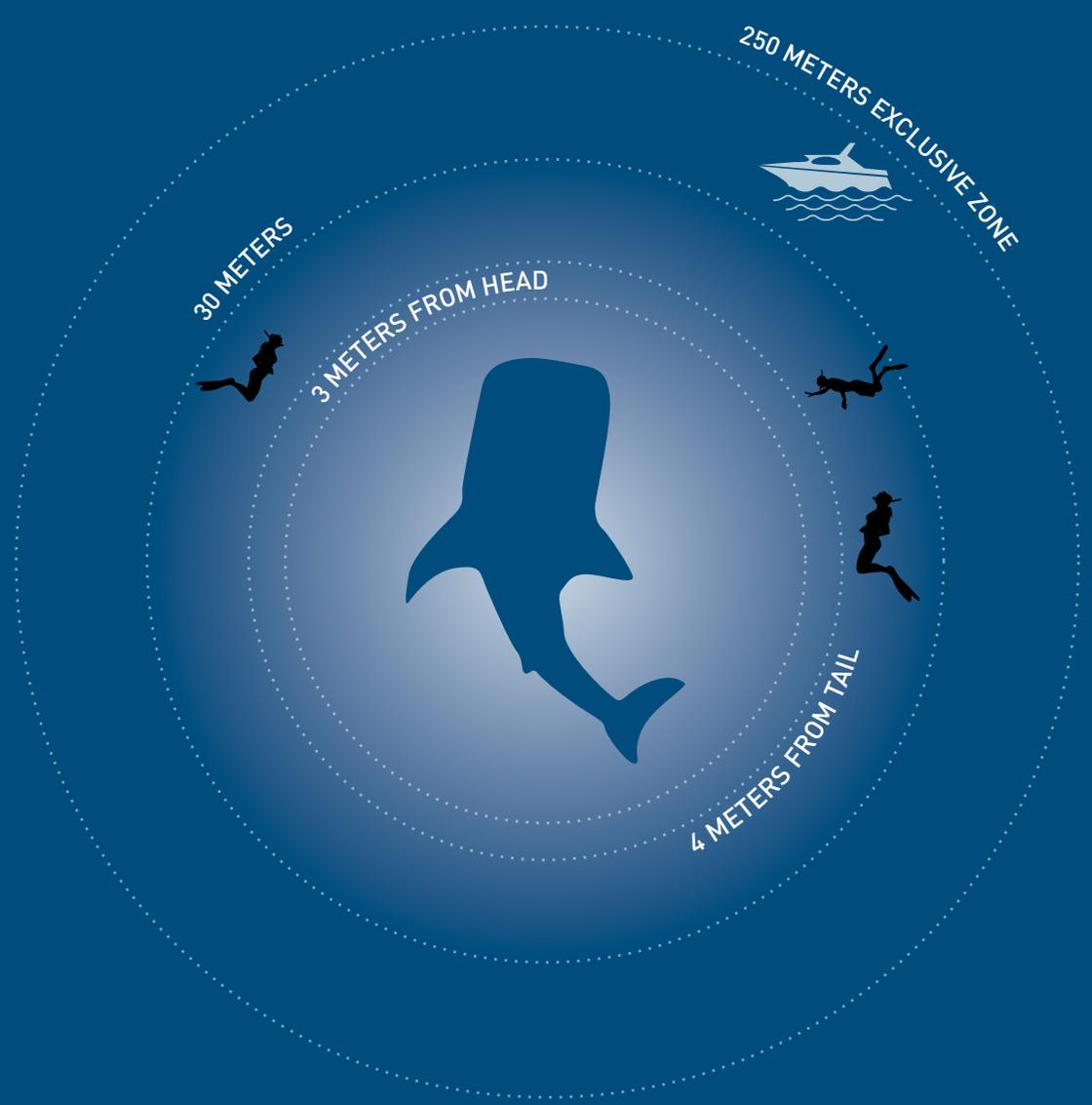
VESSEL OPERATIONS		HUMAN-ANIMAL INTERACTION		DIVE OPERATORS	
DISTANCE	Must not approach closer than 30m to a shark Approach from ahead of the shark's direction of travel when dropping swimmers into the water.	GROUP SIZE	Maximum 10 people in the water at any one time, including guides and videographer/photographer.	INTRODUCTORY BRIEF	Inform all snorkelers of the biology of and threats to whale sharks. Clearly explain code of conduct and reasons for rules.
SPEED	Less than 8 knots, no boat propellers used <100m from whale shark.	DISTANCE	> 3m from head of shark, > 4m from tail.		
TIME IN PROXIMITY	Maximum 90 minutes in a 250m radius contact zone.	TOUCHING/RIDING	Do not touch or ride.	SIGNAGE	Provide signs and infographics in dive shops and on boats Display both whale shark and dive flags when divers are in the water.
OTHER VESSELS	An exclusive contact zone of 250m radius applies around any whale shark. Only one vessel at a time may operate within the zone. The first vessel within that zone is considered to be 'in contact'. A second vessel to arrive must keep a distance of 250m from the shark. Any other vessels must be 400m from the shark. No scooters or jet skis.	FEEDING	Do not feed.		
		SWIMMING	Do not chase, harass, interrupt swimming path or attempt to trap.		
EXCLUSIVE CONTACT	Each individual shark should only be interacted with by one group of tourists per day, not passed from group to group. Operators need to communicate with each other to facilitate this.	PHOTOGRAPHY	No flash photography. No selfies.	CODE OF CONDUCT	Display code of conduct in dive shops and on boats.
		SCUBA	No scuba.		
		ACCESSORIES	Do not wear or use any apparatus that produces noise or that could disturb the sharks (e.g. electronic shark-repelling devices).	ENFORCEMENT	Inform snorkelers that non-compliance will not be tolerated. Use a two-strike system: one warning followed by a swimming ban. Have a member of staff on board to monitor compliance.
SUNSCREEN	Suntan lotion may cause irritation to the animals and damage some habitats. See marinesafe.org for information on non-marine-toxic products.				

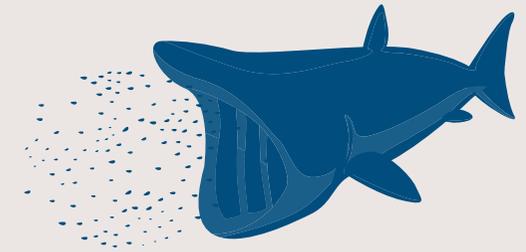


WHALE SHARKS INTERACTION GUIDELINES

The following code of conduct is based on existing codes of conduct for swimming with whale sharks in Ningaloo Reef, Western Australia, as well as research studies⁷⁷

- 
CODE OF CONDUCT
- 
DISPLAY SIGNAGE
- 
INTRODUCTORY BRIEF
- 
ENFORCEMENT
- 
NUMBER OF VESSELS
- 
NO SCUBA
- 
EXCLUSIVE CONTACT
- 
NO ACCESSORIES
- 
8 KNOTS
SPEED
- 
NO FEEDING
- 
NO HARASSING OR CHASING
- 
NO SUNSCREEN
- 
90 MINS
TIME IN PROXIMITY
- 
NO SCOOTERS OR JET SKIS
- 
NO FLASH PHOTOGRAPHY
- 
PHOTOGRAPHY
- 
MAX GROUP SIZE 10
- 
NO TOUCHING OR RIDING
- 
NO SELFIES WITH ANIMALS





TOOL 6: BASKING SHARKS example code of conduct

BASKING SHARKS

The following code of conduct is based on existing codes of conduct for boat users, kayakers, swimmers, divers and surfers interacting with basking sharks created by The Shark Trust (www.baskingsharks.org) and Fisheries and Oceans, Canada ⁷⁸

BOAT/VEHICLE RESTRICTIONS		HUMAN-ANIMAL INTERACTION		DIVE OPERATORS	
DISTANCE	Do not approach within 100m. Maintain a distance of at least 500m where there are pairs or large numbers of sharks following each other closely. This may be courting behavior and they should not be disturbed. Caution when sharks have been seen breaching.	GROUP SIZE	Maximum 4 people within 100 metre of a shark.	INTRODUCTORY BRIEF	Inform all snorkelers of the biology and threats to basking sharks. Clearly explain code of conduct and reasons for rules. Inform all snorkelers risks of injury to diver and shark.
		DISTANCE	> 4m from the shark and be wary of the tail		
		TOUCHING/RIDING	Do not touch or ride.		
		FEEDING	Do not feed.		
SPEED	< 6 knots when approaching area, no boat propellers in use < 100 meters. Avoid sudden changes in speed.	SWIMMING	Do not chase, harass, interrupt swimming path or attempt to trap. Stay in group, do not string around sharks.	SIGNAGE	Provide signs and infographics in dive shops and on boats.
TIME IN PROXIMITY	Maximum 90 minutes.	PHOTOGRAPHY	Photography allowed.	CODE OF CONDUCT	Display code of conduct in dive shops and on boats.
OTHER VESSELS	Do not allow several vessels to surround the shark. No jet skies.	SCUBA	No Scuba.		
		ACCESSORIES	Do not wear or use any apparatus that produces noise or that could disturb the sharks (e.g. electronic shark-repelling devices).	ENFORCEMENT	Inform snorkelers that non-compliance will not be tolerated. Use a two-strike system: one warning followed by a swimming ban. Have a member of staff on board to monitor compliance.
EXCLUSIVE CONTACT	Each individual shark should only be interacted with one group of tourists per day. Not continuously passed from group to group.	SUNSCREEN	Suntan lotion may cause irritation to the animals and damage some habitats. See marinesafe.org for information on non-marine-toxic products.		



BASKING SHARKS INTERACTION GUIDELINES

The following code of conduct is based on existing codes of conduct for boat users, kayakers, swimmers, divers and surfers interacting with basking sharks created by The Shark Trust (www.baskingsharks.org) and Fisheries and Oceans, Canada⁷⁸



CODE OF CONDUCT



DISPLAY SIGNAGE



INTRODUCTORY BRIEF



ENFORCEMENT



NUMBER OF VESSELS



NO SCUBA



EXCLUSIVE CONTACT



NO ACCESSORIES



SPEED



NO FEEDING



NO HARASSING OR CHASING



NO SUNSCREEN



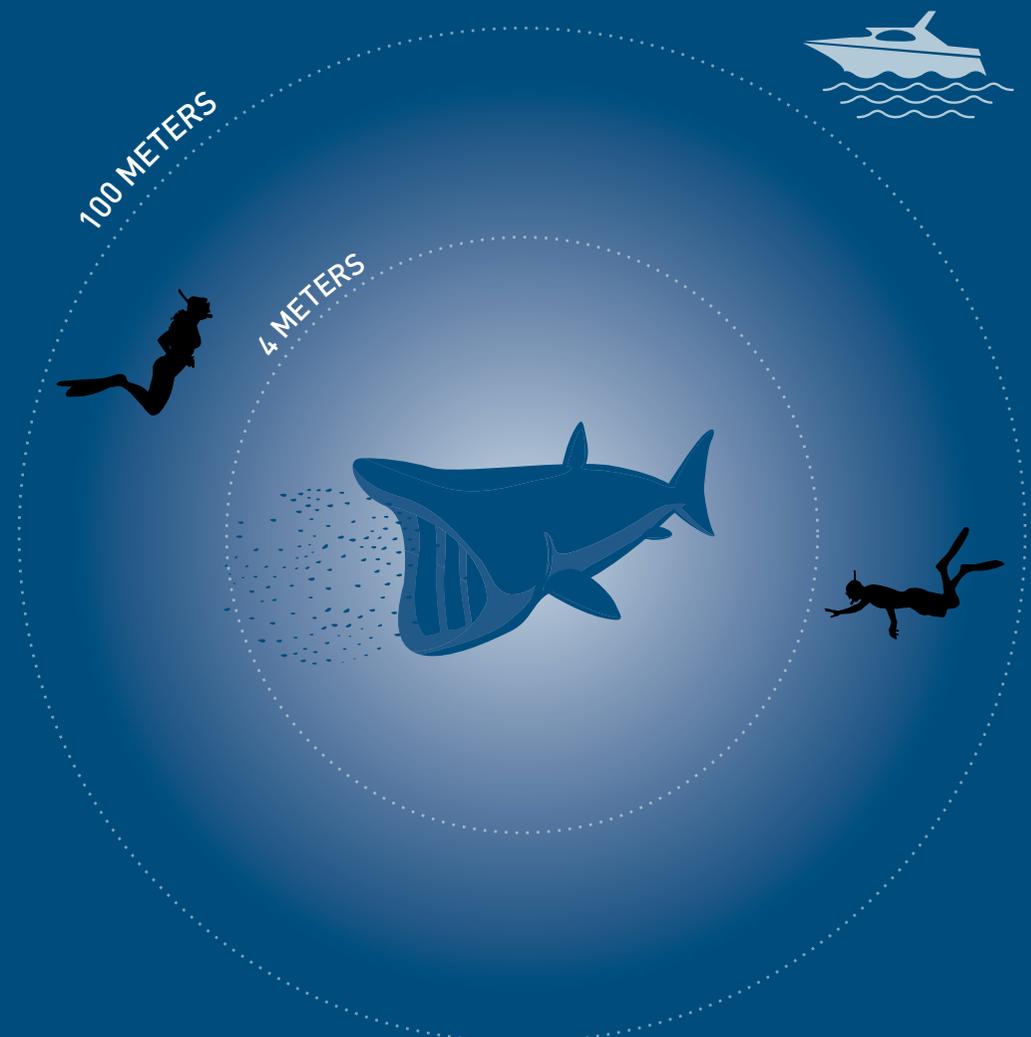
TIME IN PROXIMITY

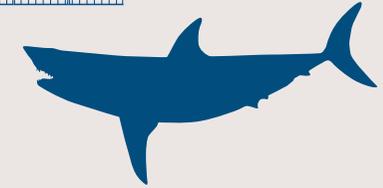
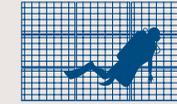


NO TOUCHING OR RIDING



PHOTOGRAPHY





TOOL 6: SHARK CAGE DIVING example code of conduct

SHARK CAGE DIVING

The following code of conduct is based on existing codes of conduct for commercial great white shark cage diving in New Zealand, as well as the latest research ⁷⁹

BOAT/VEHICLE RESTRICTIONS		PROVISIONING		DIVE OPERATORS	
DISTANCE	> 400m from all other vessels.	CHUMMING, LURES, ATTRACTANTS AND FEEDING	Lures and attractants must not be allowed to drift or be pulled by operators. No mammalian-based products. Lures, attractants and feed should be local and the natural food of the sharks. Burley must be minced finely enough to not provide food. Ropes in water for lures and attractants must be made of natural biodegradable material. Sacks of burley must not be hung from side of vessel or cage – it must be stored on board. Minimal use when shark has been attracted. Shark must not be fed or allowed to take a throw lure. Sharks should be given days off from provisioning.	INTRODUCTORY BRIEF	Inform all divers of the biology of and threats to great white sharks. Clearly explain code of conduct and reasons for rules. Inform all divers of risks of injury to diver and shark.
SPEED	< 6 knots when approaching area.				
TIME IN PROXIMITY	Maximum 90 minutes.				
EXCLUSIVE CONTACT	One vessel and one cage per shark.				
OTHER ACTIVITIES	No fishing before, during or after diving.				
CAGE RESTRICTIONS		HUMAN-ANIMAL INTERACTION		SIGNAGE	Provide signs and infographics in dive shops and on boats.
DESIGN	No sharp or protruding edges.	TOUCHING/RIDING	Do not touch sharks at any point or induce 'tonic immobility*'. Customers must remain completely in cage at all times.		
VIEWING WINDOW	Height of window < 30cm.	SHARK BEHAVIOR	Dive supervisors must terminate the dive if the shark shows signs of being distressed or alarmed.		
ATTACHMENT	Securely attached to boat by an arm, ramp or chain.	ACCESSORIES	Do not wear or use any apparatus that produces noise or that could disturb the sharks (e.g. electronic shark-repelling devices).	CODE OF CONDUCT	Display code of conduct in dive shops and on boats.
DECOYS		SUNSCREEN	Suntan lotion may cause irritation to the animals and damage some habitats. See marinesafe.org for information on non-marine-toxic products.	ENFORCEMENT	Dive supervisors must terminate the dive if any divers harass the shark.
DECOYS	No use of decoys or provoking sharks – potentially harmful or physiologically costly behaviors like breaching or biting the cage should not be encouraged.				

*Tonic immobility refers to natural state of paralysis or immobility which some shark species enter when physically inverted or handled in specific ways. It makes sharks and rays unresponsive. It can cause excessive stress to the animal. ⁸⁰



SHARK CAGE DIVING INTERACTION GUIDELINES

The following code of conduct is based on existing codes of conduct for commercial great white shark cage diving in New Zealand, as well as the latest research^{79,80}



CODE OF CONDUCT



DISPLAY SIGNAGE



INTRODUCTORY BRIEF



ENFORCEMENT



NO TOUCHING OR RIDING



SCUBA



NO FISHING



NO ACCESSORIES



SPEED



LURES AND ATTRACTANTS



NO SWIMMING



NO SUNSCREEN



TIME IN PROXIMITY



CAGE RESTRICTIONS



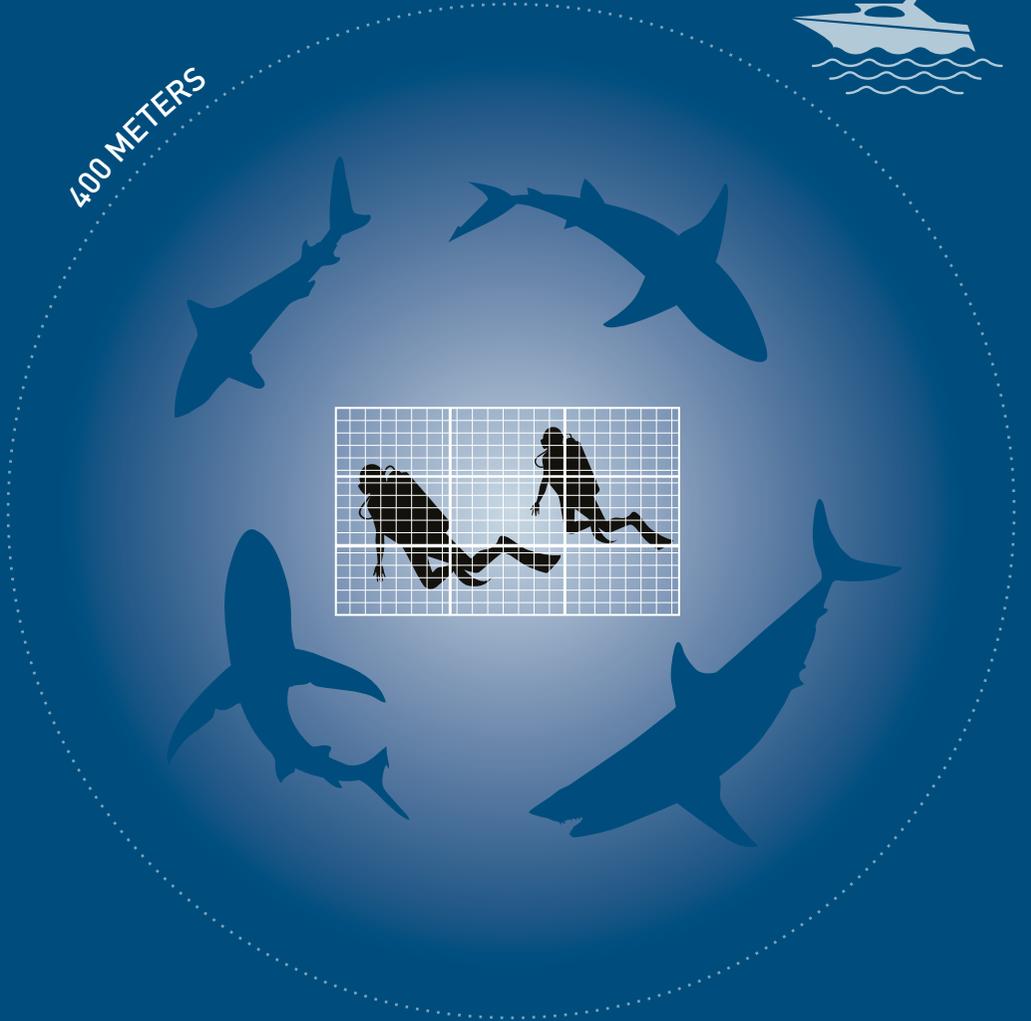
SHARK BEHAVIOR



NO DECOYS



400 METERS





TOOL 6: REEF AND PELAGIC SHARKS example code of conduct

REEF AND PELAGIC SHARKS

The following Code of Conduct is based on an existing codes of conduct for interacting with Grey Nurse Sharks off the eastern coast of Australia and research studies ⁸¹

BOAT/VEHICLE RESTRICTIONS		HUMAN-ANIMAL INTERACTION		DIVE OPERATORS	
DISTANCE	N/A	GROUP SIZE	Maximum 10 people, including guide and videographer/photographer.	INTRODUCTORY BRIEF	Inform all divers at the beginning of the biology and threats to reef and pelagic sharks, particularly critical habitat of threatened sharks in the region. Convey code of conduct clearly. Inform all divers of risks of injury to diver and shark.
		DISTANCE	> 3m and remain as close to the bottom as possible.		
SPEED	N/A	TOUCHING/RIDING	Do not touch, ride or induce 'tonic immobility'*		
		TOWING	N/A		
TIME IN PROXIMITY	Maximum 90 minutes.	FEEDING	Do not feed unless authorised provisioning activity.	SIGNAGE	Provide signs and info-graphics in dive shops and on boats for foreign tourists.
		SWIMMING	Do not chase, harass, interrupt swimming path or attempt to trap.		
EXCLUSIVE CONTACT	N/A	SCUBA	Yes but no night dives in sites identified as critical habitat (i.e. for Thresher shark and Grey Nurse Sharks). Do not block the entrance of or enter caves where sharks rest.	CODE OF CONDUCT	Display Code of Conduct in dive shops and on boats.
		ACCESSORIES	Do not wear or use of mechanical apparatus or any apparatus that produces noise or that could disturb the sharks (i.e. electronic shark-repelling devices), scooters and horns.		
		SUNSCREEN	Suntan lotion may cause irritation to the animals and damage some habitats. See marinesafe.org for information on non-marine-toxic products.	ENFORCEMENT	Inform divers that non-compliance will not be tolerated. Two-strike warning system. Warning followed by swimming/diving ban.

*Tonic immobility refers to natural state of paralysis or immobility which some shark species enter when physically inverted or handled in specific ways. It makes sharks and rays unresponsive. It can cause excessive stress to the animal.⁸²



REEF AND PELAGIC SHARKS INTERACTION GUIDELINES

The following Code of Conduct is based on an existing Codes of Conduct for interacting with Grey Nurse Sharks off the eastern coast of Australia and research studies ⁸¹

CODE OF CONDUCT

DISPLAY SIGNAGE

INTRODUCTORY BRIEF

ENFORCEMENT

NUMBER OF VESSELS

NO ACCESSORIES

EXCLUSIVE CONTACT

NO ACCESSORIES

NO HARASSING OR CHASING

SCUBA

NO UNDERWATER SCOOTER

NO SUNSCREEN

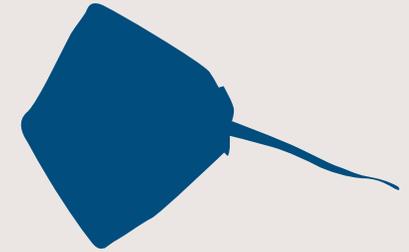
TIME IN PROXIMITY
90 MINS

NO TOUCHING OR RIDING

NO FEEDING

MAX GROUP SIZE 10

3 METERS



TOOL 6: STINGRAYS example code of conduct

STINGRAYS

The following code of conduct is based on data and studies of wild stingray populations and how to best minimize tourist-related impacts⁸³

BOAT/VEHICLE RESTRICTIONS		HUMAN-ANIMAL INTERACTION		DIVE OPERATORS	
DISTANCE	> 30m from the ray aggregation.	GROUP SIZE	Maximum 10 people, including the guide and videographer/photographer.	INTRODUCTORY BRIEF	Inform all customers of the biology of and threats to rays. Clearly explain code of conduct and reasons for rules. Inform all snorkelers of risks of injury to person and ray.
		DISTANCE	> 2m		
		TOUCHING/RIDING	Do not touch or stand on the rays.		
SPEED	< 6 knots when approaching area.	FEEDING	Do not feed unless authorized provisioning activity.	SIGNAGE	Provide signs and infographics at dive shops, on boats and at locations where tourists visit groups of rays.
		SWIMMING	Do not chase, harass, interrupt swimming path or attempt to trap.		
		PHOTOGRAPHY	No flash photography. No selfies		
TIME IN PROXIMITY	Maximum 90 minutes.	SCUBA	No scuba.	CODE OF CONDUCT	Display code of conduct in dive shops, on boats and at tourist locations.
		ACCESSORIES	Do not wear sharp pieces of equipment including snorkels or jewelry.		
			Do not wear or use any apparatus that produces noise or that could disturb the rays.		
EXCLUSIVE CONTACT	1 vessel only per ray aggregation.	SUNSCREEN	Suntan lotion may cause irritation to the animals and damage some habitats. See marinesafe.org for information on non-marine-toxic products.	ENFORCEMENT	Ranger or staff to educate visitors about the rays at known feeding sites to control amount of feeding and monitor tourist interaction, especially in peak season. Inform customers that non-compliance will not be tolerated. Use a two-strike system: one warning followed by a swimming ban. Have a member of staff on board to monitor compliance.



STINGRAY INTERACTION GUIDELINES

The following code of conduct is based on data and studies of wild stingray populations and how to best minimize tourist-related impacts⁸³



CODE OF CONDUCT



DISPLAY SIGNAGE



INTRODUCTORY BRIEF



ENFORCEMENT



NUMBER OF VESSELS



NO SCUBA



EXCLUSIVE CONTACT



NO ACCESSORIES



SPEED



NO FEEDING



NO TOUCHING OR RIDING



NO SUNSCREEN



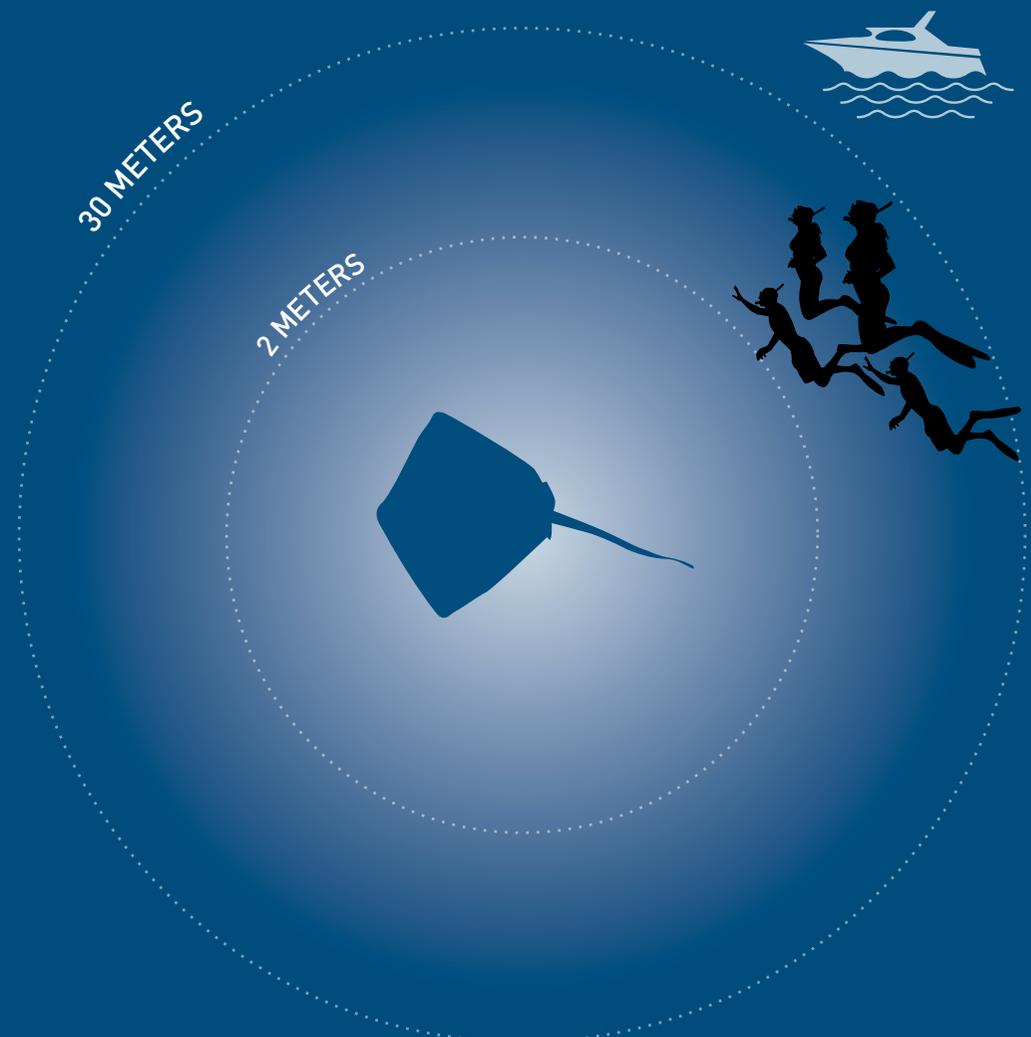
TIME IN PROXIMITY



NO FLASH PHOTOGRAPHY



NO SELFIES WITH ANIMALS





TOOL 6: MOBULID RAYS example code of conduct

MOBULID RAYS (MANTA AND DEVIL RAYS)

The following code of conduct is based on the Manta Interaction Guidelines by the Manta Trust. It also reflects recent research studies ⁸⁴

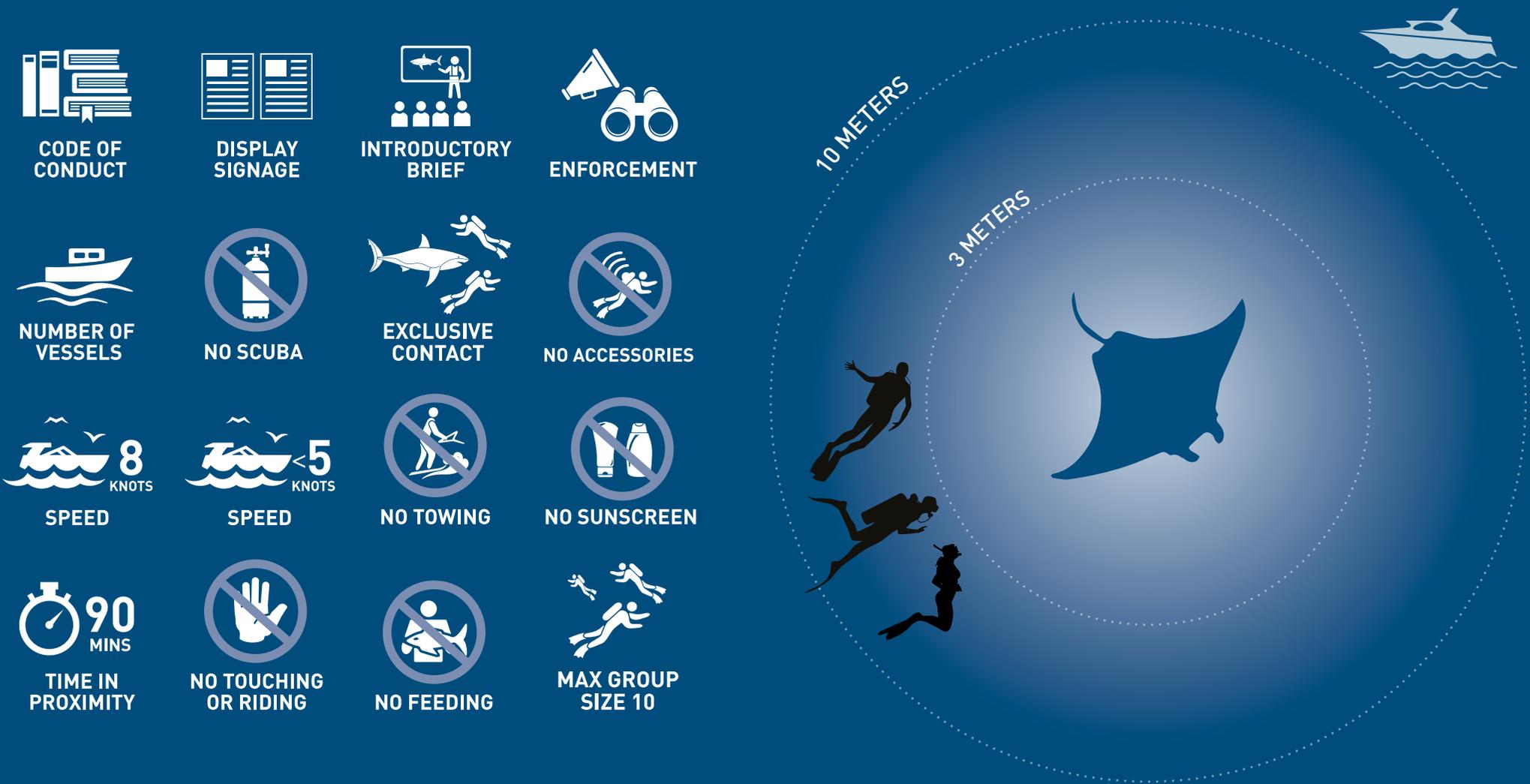
BOAT/VEHICLE RESTRICTIONS		HUMAN-ANIMAL INTERACTION		DIVE OPERATORS			
DISTANCE	> 10m at all times.	GROUP SIZE	Maximum 10 people, including guide and videographer/photographer.	INTRODUCTORY BRIEF	Inform all customers of the biology of and threats to rays. Clearly explain code of conduct and reasons for rules. Inform all snorkelers/divers of risks of injury to person and ray.		
		DISTANCE	> 3m				
		TOUCHING/RIDING	Do not touch or ride the rays.				
SPEED	< 8 knots within 100m, < 5 knots within 30m.	TOWING	No boats driving over manta cleaning stations/aggregation sites. No towing swimmers through manta aggregation sites.				
		FEEDING	Do not feed.				
		SWIMMING	Do not chase, harass, interrupt swimming path or attempt to trap. Do not swim over cleaning station*. Approach mantas slowly from their side allowing the animal to see you while it can maintain a clear path of travel ahead.				
TIME IN PROXIMITY	Maximum 90 minutes.	SCUBA	Preferably divers should position themselves to the side, near to the seabed. Divers should not stand on coral reefs or other substrate that can easily be damaged, such as sponge gardens etc. If at a cleaning station, keep at a distance and remain still so as to not disrupt cleaning. Keeping to the side at a distance will also ensure that you don't create a curtain of bubbles near the feeding aggregation that may displace plankton. Snorkellers among a group of feeding manta rays should remain still.	SIGNAGE	Provide signs and infographics at dive shops, on boats and at locations where tourists visit groups of rays.		
				CODE OF CONDUCT	Display code of conduct in dive shops, on boats and at tourist locations.		
EXCLUSIVE CONTACT	Depends on the site and what mantas are doing, (ie cleaning or feeding).			ACCESSORIES	Do not wear sharp pieces of equipment including snorkels or jewelry.	ENFORCEMENT	Ranger or staff to educate visitors about the rays at known feeding sites to control and monitor tourist interaction, especially in peak season. Inform snorkelers/divers that non-compliance will not be tolerated. Use a two-strike system: one warning followed by a swimming ban. Have a member of staff on board to monitor compliance.
				SUNSCREEN	Suntan lotion may cause irritation to the animals and damage some habitats. See marinesafe.org for information on non-marine-toxic products.		

*Cleaning station refers to a section of a coral reef where cleaner fish, such as wrasses or gobies, remove parasites from large fish, sharks or rays



MOBULID RAYS (MANTA AND DEVIL RAYS) INTERACTION GUIDELINES

The following code of conduct is based on the Manta Interaction Guidelines by the Manta Trust. It also reflects recent research studies⁸⁴



TOOL 7: RESPONSIBLE PROVISIONING

Provisioning is a highly controversial and potentially harmful practice. Where natural encounters are likely without any form of attractant, it is best not to use one. Provisioning should only be undertaken in exceptional circumstances/locations and in a responsible way.

Because the long-term impacts of provisioning are unknown, a precautionary approach is recommended to avoid unexpected ecological, safety, and economic consequences. Possible management actions include:

- Controlling the amount and type of bait an operator can use over a given time period; and
- Using a permitting system to limit the number of operators allowed to provision sharks or rays.⁸⁵

If you do use provisioning, you should have a responsible provisioning plan in place. It's wise to keep up to date with the latest research and be prepared to adapt the plan when change is needed.

A responsible provisioning plan needs to:

- Contain information about the species being provisioned – the name and any significant biological or ecological traits, e.g. size, what it eats and how often, and whether it's resident to the area year-round or seasonally. Identify risks based on the latest science associated with provisioning of that species or similar species. These risks can be environmental, social, or economic. These could include:
 - Safety issues for humans and the animals
 - Behavioral, ecological or physiological impacts to the animals
 - Changes to the local ecosystem, e.g. changes to habitats, introduction of different species or changes in the types of species found
 - Impacts on the operator's social license, e.g. community concerns that feeding will cause 'shark attacks'.
- Rank those risks according to impact and likelihood of the risk occurring.
- Identify measures that can be taken to reduce the risks identified.

The following recommendations can help you prepare your responsible provisioning plan and reduce potential risks. Note that different species of sharks can react in different ways.

RECOMMENDATIONS

1. Use a combination of local and natural foods that reflects the natural diet of the animals.
2. **Control**
 - a. the amount of food for each shark/ ray per day.
 - b. the provisioning to once a day and consider varying the time of feeding. Note – sharks that are attracted to an aggregation site for tourism may remain in close vicinity, which could potentially put extra pressure on that area from hungry sharks.⁸⁶ In this case it is more important to limit feeding events, not the amount each shark receives.
 - c. the number of provisioning days (i.e. have days off) to reduce impacts that lead to increased residency or changes in natural behavior of sharks and rays at a site.
3. Deliver food in the most natural way (e.g. lying on the bottom or under reef patches at a distance from humans).
4. Give small amounts of food at once in order to avoid competition and aggression between sharks on large pieces.
5. Feeding (especially hand feeding) is much more unsafe (in diving safety terms) than chumming or baiting.
6. Limit the number of people feeding – preferably only the dive supervisor, with everyone kneeling on the seabed. For sharks, the guests should be behind or against some structure or have lookouts (staff) behind them for sharks that may enter from behind.
7. Don't touch the sharks or rays, and ensure they have ample space in which to maneuver – although feeders may have to push animals away from guests.
8. Feed away from the vessel to prevent propeller scars and boat anticipation behavior.
9. Undertake provisioning of large predators well away from population and tourism centers.
10. Have an accident and emergency strategy and staff trained in its application.
11. Get involved in provisioning research.



TOOL 7: RESPONSIBLE PROVISIONING

RESEARCH

While the long-term impacts of provisioning remain uncertain, evidence is emerging of negative impacts. The following table summarizes some of the latest studies.

LOCATION	ACTION	RESULTS	POTENTIAL EFFECTS	STUDY REFERENCE
STINGRAY CITY SANDBAR, CAYMAN ISLANDS ⁸⁷	Feeding stingrays with squid.	Rays being lifted entirely out of water. Rays displaying shoaling behavior, skin abrasions from handling, altered feeding habits. Buzzing and bumping divers for food and displaying hunger and aggression when boat isn't able to access site.	Dependence on provisioning, limited natural foraging.	Shackley, M. (1998). 'Stingray City' – managing the impact of underwater tourism in the Cayman Islands. <i>Journal of Sustainable Tourism</i> , 6(4), 328-338.
STINGRAY CITY SANDBAR, CAYMAN ISLANDS ⁸⁸	Feeding stingrays with squid.	Disproportionate amount of fatty acid, essential fatty acids and amino acids.	Diet-related impacts on growth, reproduction, survival and overall health.	Semeniuk, C. A., Speers-Roesch, B., & Rothley, K. D. (2007). Using fatty-acid profile analysis as an ecologic indicator in the management of tourist impacts on marine wildlife: a case of stingray-feeding in the Caribbean. <i>Environmental Management</i> , 40(4), 665-677.
STINGRAY CITY SANDBAR, CAYMAN ISLANDS ⁸⁹	Feeding stingrays with squid.	Overall lower body condition of fed stingrays including injuries by boat and people, higher load of ectoparasites, conspecific bites, reversed diel/nocturnal pattern, gregarious living and atypical densities.	Decreased long-term fitness.	Semeniuk, C. A., & Rothley, K. D. (2008). Costs of group-living for a normally solitary forager: effects of provisioning tourism on southern stingrays <i>Dasyatis americana</i> . <i>Marine Ecology-Progress Series</i> , 357, 271.
STINGRAY CITY SANDBAR, CAYMAN ISLANDS ⁹⁰	Feeding stingrays with squid.	Hematological differences in leukocrit, serum proteins and antioxidant potential indicating an attenuated defense system.	Indicates dietary inadequacies, immune deficiency, disease and overall lower body condition.	Semeniuk, C. A., Bourgeon, S., Smith, S. L., & Rothley, K. D. (2009). Hematological differences between stingrays at tourist and non-visited sites suggest physiological costs of wildlife tourism. <i>Biological Conservation</i> , 142(8), 1818-1829.



TOOL 7: RESPONSIBLE PROVISIONING

LOCATION	ACTION	RESULTS	POTENTIAL EFFECTS	STUDY REFERENCE
STINGRAY CITY SANDBAR, CAYMAN ISLANDS ⁹¹	Feeding stingrays	Supplemental feeding has strikingly altered movement behavior and spatial distribution of the stingrays, and generated a high density of animals at the Stingray City Sandbar.	There could be downstream fitness costs for individuals and potentially broader ecosystem effects.	<i>Corcoran MJ, Wetherbee BM, Shivji MS, Potenski MD, Chapman DD, et al. (2013) Supplemental feeding for ecotourism reverses diel activity and alters movement patterns and spatial distribution of the southern stingray, <i>Dasyatis americana</i>. PLoS ONE 8: e59235</i>
HAMELIN BAY, WESTERN AUSTRALIA ⁹²	Feeding stingrays at unsupervised site.	Aggressive behavior between rays and other animals. Strong inter- and intra-specific hierarchy. Fed on average 12.5kg/day.	Concerns regarding stingray safety and risky behaviors by humans.	<i>Newsome, D., Lewis, A., & Moncrieff, D. (2004). Impacts and risks associated with developing, but unsupervised, stingray tourism at Hamelin Bay, Western Australia. International Journal of Tourism Research, 6(5), 305-323.</i>
BORA-BORA ISLAND, FRENCH POLYNESIA ⁹³	Feeding sicklefin lemon sharks.	Increased risk of accidental bites on divers linked to hand-feeding practices.	Suggest to avoid hand-feeding in implemented practices of provisioning.	<i>Clua, E.E., Torrente, F. (2015) Determining the Role of Hand Feeding Practices in Accidental Shark Bites on Scuba Divers. Journal of Forensic Science & Criminology, 3(5), 502.</i>
MOOREA ISLAND, FRENCH POLYNESIA ⁹⁴	Feeding pink whiprays.	Individual variation in frequentation rates at feeding sites. Anticipation behavior, daily bi-modal behavior.	Potential long-term effects of feeding on behavior, reproduction and health.	<i>Gaspar, C., Chateau, O., & Galzin, R. (2008). Feeding sites frequentation by the pink whipray <i>Himantura fai</i> in Moorea (French Polynesia) as determined by acoustic telemetry. Cybium, 32(2), 153-164.</i>



TOOL 7: RESPONSIBLE PROVISIONING

LOCATION	ACTION	RESULTS	POTENTIAL EFFECTS	STUDY REFERENCE
SHARK REEF MARINE RESERVE, FIJI ^{95,96}	Feeding bull sharks.	Intraspecific variation in residency and site fidelity.	Long-term movements appear unaffected	<i>Brunnschweiler, J. M., & Barnett, A. (2013). Opportunistic visitors: long-term behavioral response of bull sharks to food provisioning in Fiji. PLoS One, 8(3), e58522.</i> <i>Brunnschweiler, J.M., & Baensch, H. (2011) Seasonal and long-term changes in relative abundance of bull sharks from a tourist shark feeding site in Fiji. PLoS ONE, 6(1), e16597</i>
SHARK REEF MARINE RESERVE, FIJI ⁹⁷	Multi-species shark feeding site.	Numbers of bull sharks increased over years; majority are large (>2m). Competitive exclusion among species.	Changes in natural community composition, richness and/or predation pressure unclear.	<i>Brunnschweiler, J. M., Abrantes, K. G., & Barnett, A. (2014). Long-term changes in species composition and relative abundances of sharks at a provisioning site. PLoS ONE, 9(1), e86682. doi:10.1371/journal.pone.0086682</i>
NEPTUNE ISLANDS, SOUTH AUSTRALIA ⁹⁸	Cage-diving with white sharks using attractants.	Shark numbers have increased. Increases in residency. Changes in diel patterns.	Broad-scale movement not affected. Concern that sharks miss opportunities to hunt pinnipeds, making provisioning energetically costly.	<i>Bruce, B.D., & Bradford, R.W. (2013). The effects of shark cage-diving operations on the behavior and movements of white sharks, <i>Carcharodon carcharias</i>, at the Neptune Islands, South Australia. Marine Biology, 160, 889–907.</i>
RED SEA, OFF JEDDAH, SAUDI ARABIA ⁹⁹	Feeding female silky sharks at two reefs.	Visit reefs irrespective of feeding. May stay longer if fed.	Modifications to local habitat use. No marked seasonal trends, potential to affect population dynamics given the sex bias.	<i>Clarke, C., Lea, J.S.E., & Ormond, R.F.G. (2011). Reef-use and residency patterns of a baited population of silky sharks, <i>Carcharhinus falciformis</i>, in the Red Sea. Marine and Freshwater Research, 62(6), 668-675.</i>



TOOL 7: RESPONSIBLE PROVISIONING

LOCATION	ACTION	RESULTS	POTENTIAL EFFECTS	STUDY REFERENCE
SEAL ISLAND, SOUTH AFRICA ¹⁰⁰	Using a seal decoy and chum to attract white sharks.	Change in swimming depth. Majority of sharks showed little interest.	The sub-set of sharks that were attracted showed a decreasing response over time. Unlikely to have behavioral impacts.	<i>Laroche, R., Kock, A.A., Dill, L.M., & Oosthuizen, W. (2007). Effects of provisioning ecotourism activity on the behavior of white sharks Carcharodon carcharias. Marine Ecology Progress Series, 338, 199-209.</i>
NEW PROVIDENCE, BAHAMAS ¹⁰¹	Feeding Caribbean reef sharks.	A few sharks monopolized majority of bait, displaying a social hierarchy. These sharks had a higher N level in tissues, thought to be attributed to high-trophic level meals (grouper carcasses).	No evidence of behavioral impacts, changes to seasonal movements or degrees of residency.	<i>Maljković, A., & Côté, I.M. (2011). Effects of tourism-related provisioning on the trophic signatures and movement patterns of an apex predator, the Caribbean reef shark. Biological Conservation, 144(2), 859-865</i>
OAHU, HAWAII ¹⁰²	Multi-species cage-diving using fish scraps.	Galapagos, sandbar and tiger sharks all displayed seasonal and long-term residency changes. Social hierarchies. Only sexually mature male sandbar sharks. Both mature and immature Galapagos sharks.	No changes to long-term movements. Sandbar sharks are most likely being encountered during breeding migrations.	<i>Bruce, B.D., & Bradford, R.W. (2013). The effects of shark cage-diving operations on the behavior and movements of white sharks, Carcharodon carcharias, at the Neptune Islands, South Australia. Marine Biology, 160, 889-907.</i>
CEBU, PHILIPPINES ¹⁰³	Feeding whale sharks.	Extended residency of fed individuals, 44.9 days vs. 22.4 days. Propeller scars observed in 47% of individuals.	Changes in local habitat use. Lower body condition, risk of injury.	<i>Araujo, G., Lucey, A., Labaja, J., So, C.L., Snow, S., & Ponzio, A. (2014). Population structure and residency patterns of whale sharks, Rhincodon typus, at a provisioning site in Cebu, Philippines. PeerJ, 2, e543.</i>



TOOL 7: RESPONSIBLE PROVISIONING

LOCATION	ACTION	RESULTS	POTENTIAL EFFECTS	STUDY REFERENCE
MOOREA ISLAND, FRENCH POLYNESIA ¹⁰⁴	Impacts to fish populations at shark feeding site.	Long-term shark feeding does have some parasitological impact in grouper and snapper species.	Does not seem to affect health of fish.	<i>Vignon, M., Sasal, P., Johnson, R. L., & Galzin, R. (2010). Impact of shark-feeding tourism on surrounding fish populations off Moorea Island (French Polynesia). Marine and Freshwater Research, 61(2), 163-169.</i>
MOOREA ISLAND, FRENCH POLYNESIA ^{105, 106}	Feeding sicklefin lemon sharks.	Increased intra-specific aggression. Increased residency. Gregarious feeding though naturally solitary. Increased accidental bites to humans.	Suggest potential inbreeding risks due to increased residency (although this was discredited in a later study). Continued aggression towards people.	<i>Clua, E., Buray, N., Legendre, P., Mourier, J., & Planes, S. (2010). Behavioral response of sicklefin lemon sharks Negaprion acutidens to underwater feeding for ecotourism purposes. Marine Ecology Progress Series, 414, 257-266</i> <i>Mourier, J., Buray, N., Schultz, J. K., Clua, E., & Planes, S. (2013). Genetic network and breeding patterns of a sicklefin lemon shark (Negaprion acutidens) population in the Society Islands, French Polynesia. PLoS One, 8(8).</i>
OSPREY REEF, CORAL SEA, AUSTRALIA ¹⁰⁷	Feeding white-tip reef sharks.	Anticipation behavior. When boats were present these inherently nocturnal sharks exhibited long periods of vertical activity during the day.	Potential effects on energy budgets, metabolism, overall health and fitness.	<i>Fitzpatrick, R., Abrantes, K.G., Seymour, J., & Barnett, A. (2011). Variation in depth of whitetip reef sharks: does provisioning ecotourism change their behavior? Coral Reefs, 30(3), 569-577.</i>

