Games Using the Coastal Environment

Octopus's Garden

Level

1-3

Key question

What do young children learn on the beach?

Key Outcome

Develop an understanding of the characteristics of beaches, their animals and plants.

by Jody Plecas and Bob Winter, Gould League of Victoria.

Before starting these beach fun activities with a group of primary school children, divide the group into smaller groups, each in charge of an adult. Make sure safety aspects are understood and that the adults follow the instructions too.

Do an up-front guide to the safety aspects required at the beach, that is, demonstrating wearing hats, sunscreen, sandshoes or sneakers or sandals (not thongs) and drinking lots of freshwater.

Key reminders are:

- no running
- no living animal to be removed or damaged
- turn rocks once – turn twice, so they are back over
- don't touch Coke cans or bottles
- do not touch octopus of any species
- do not touch cones, jellyfish, bristleworms
- beware of things that look like they came from the doctor's office – syringes
- crabs can nip too
- be gentle
- if I fall there is to be NO laughing!

What you need

Set of marine creatures stickers from the Gould League stuck onto cardboard, one for each student

Magnifying glasses or sea-scopes

A hand mirror

Large bag of previously collected treasures or able to receive interesting ones found at the time

Field guides to crabs and shells

Blindfolds

One large hand mirror

What you do

After drawing attention to the hazards, do these activities in any order with a class of young students. These instructions are provided for the teacher.

Octopus's Garden

1. Mork and Mindy

The teacher stands with or in the middle of a circle of students. Set the scene with an introduction to earth with an orientation from outer space and in relation to other familiar planets. To obtain perspective, invent an outer space alien with a gimmicky name and ask the students to explain to it the things they feel are important about the beach and the sea.

2. Listening Exercise

The waterfront environment offers a wonderful opportunity to acknowledge other senses by removing sight and light. It will provide a mental snapshot to be recalled when triggered at later times. Tie a cloth blindfold over each student's eyes and ask them to listen for a minute or so (time depends on the age of the student).

- What did they hear?
- Are these sounds human made or natural?
- Where are most sounds coming from?

3. Badges and Movement

The Gould League's range of stickers is diverse enough to create a class set of badges. A vignette or cameo description of each creature and their mode of movement provides a springboard into further natural history discoveries at the beach or back at home base.

- Give out a sticker to each student and ask them to tell the group what they know about the animal or plant on the picture.
- Ask others to contribute.
- Back in the classroom, do further research to increase understanding.

4. Shells

A shell hunt is a simple but satisfying exercise for participants. It is safe, secure and familiar but allows for a myriad of other open ended discussions. There should be strong encouragement to limit removal of shell to the best three of the whole group but not taking any is best! Identification is not needed, but a Shell Guide for the area is a useful reference for inquisitive children.

5. Step by Step

By simply calling out what's under your feet as you walk up the beach from the water's edge you enable participants to awaken to the conscious realisation that there are bands of water, debris, sand and finally plants.

6. Story

Any true story about a marine creature will do but one about a night excursion hunting octopus is a useful link for all of these activities. Hence, the title of this activity. Audience participation enhances the story. The story can be read or memorised by the teacher.

7. Colour Shapes

This is an interesting exercise to raise awareness using visual acuity rather than limiting it. Again it is a doorway to a variety of topics regarding camouflage, danger signal, animal vision, light penetration through water, etc. Use a collection of items from the 'Treasure bag' or items visible on the actual beach such as shells, seaweed, cuttlefish etc. Who can find the oddest shape, or the most colourful thing?

8. Litter survey

Ask the students to look around the beach at the tide mark.

- How common or uncommon is human refuse at your location?
- Discuss the inter-relationship of litter on the beach and pollution in the water.

9. Conservation

This leads naturally on from the last activity. Discuss and review what human activities can help to make your beach better and more interesting both for you and for the plants and animals that live here.

10. Most Dangerous Animal

What or who is it? Place a mirror covertly in front of a few individuals and ask them to tell what they see. Show the mirror to the whole group and ask!

11. Bingo

This is a great opener to discover the local rock platform as well as a discussion on the harshness of the environment there and the human factors that beset it. The teacher or selected students find a natural item and describe it to the class. The rest of the group searches for a duplicate and once found, stands next to it and call out 'bingo'. The class checks that the item does match before repeating activity.

12. Was it always like this?

Provide a very brief description (geography, geology, biology) of the site to add a historical perspective.

13. Rock pool Discovery

The local beach may be degraded but we can be reasonably sure of finding crabs. Keep in mind the stress tolerance in crabs.

- Divide up a rock platform into different areas for each class group. You then hope to ensure that animals are not handled twice in the same area on the same day.
- Ask students to examine shallow rock pools and under crevices or rocks (remind them to turn the rocks back again, and not to handle blue-ringed octopus).
- Let students carefully scoop up crabs, using home made nets or ice-cream containers. Look at what's been found. The containers can be carefully poured into a larger white tray. A crab guide book can be useful to identify specimens.
- At the end, ask students to carefully return all live animals and plants to their rock crevices or pools. How do they settle back (scamper away, hide, sit there)?

To avoid any allergies, ensure that everyone washes their hands after handling crabs, preferably using freshwater if available.

Conclusion

Allow a little time for reflection by each student, perhaps while they are having a drink. Ensure they leave the beach clean.

Reference

Environmental Starters, Gould League of Victoria.

Beach Olympics

Level

Any

Key question

Which team is best in the beach Olympics?

Key Outcome

Have fun in a simple competition.

Adapted from ideas provided by Jan Thornton, Sea World, and Jan Oliver, Queensland Department of Environment.

What you need

Several teams of even numbers, appropriately dressed or labelled

One can of oil sardines for each team

A dinner plate for each team

Three sets of swimming fins (to fit team)

Large plastic bags cut into long streamers

Ping-pong balls and neo pens

A snorkel mask, glass of water, and mussel shell for each team

Whistle, obstacles and suitable flat site (can be indoors, grass or firm sand)

What you do

Students are divided into teams, with appropriate dress or identifying labels, possibly a team flag. Teams assemble at one end of the site, with the relevant equipment placed in front of them. Winner of each event is noted on board or paper, and winning team eventually parades as winners of the 'Olympics'.

Event 1. Sardine pack

Each team has an open empty sardine tin on a chair or ground in front of it. The sardines are placed on a plate. On the whistle, each team member attempts in turn to replace one sardine back into the tin in a whole state. The winner is the first team to get all the sardines back in the tin.

Provide paper towel to clean up!

Event 2. Sardine toss

One team member attempts to throw a sardine the longest distance. Best of three tries each wins.

Event 3. Fin walk

Three members of each team line up wearing pairs of fins. Each attempts in turn to travel around the course over obstacles (tree trunks, low walls, sand dune, bench, etc) to beginning. Fastest team of all three completing the course wins.

Event 4. Sea snake

Each team is provided with three long streamers, at least 5 cm across and 1 m long, cut from large garbage bags. Streamers are stapled together at top. The first team (individual or a number) to plait the streamers wins.

Event 5. Seahorse race

Each team draws a seahorse on a ping pong ball before the race. On whistle, one member blows the ball along the ground to the finishing line without using any hands.

Event 6. Mask cleaning

A glass of water and one shell (e.g. half a mussel shell) is placed in front of each team. At the end of the course a dive mask is placed, glass down in front of each team.

Each member in turn transfers water in the shell from the glass into the mask to clean it, carrying the shell to the mask. When all have had one turn, the water in the mask is tipped back into the glass. The team with the most water in its glass wins.

Conclusion

Before the march past, ensure that the area is tidy and all rubbish, sardines, etc, has been removed!

Prizes can be ‘ribbons’ or ‘medals’ of cardboard or plastic.

Nocturnal Fun on the Beach

Level

Any

Key question

What do we learn from playing games on the beach?

Key outcomes

Explain how animals use their senses to detect and respond to their environments. Use activities on the beach at night to explain features of coastal plants and animals.

by Malcolm Turner, Great Barrier Reef Marine Park Authority, Townsville, Qld.

Evenings on the coast are often times of little environmental education activity. Some people are more focussed on social activities and having fun after a heavy day of environmental learning (of course this does not apply to marine educators who think all learning is fun and are always more attentive to the environment than social interest!) However it is possible to combine fun and education by having social, active activities with take home messages. And the beach at night is the ideal place to do it.

The advantage of the beach at night is that it has few obstacles to run into, it is soft to fall on, it provides great atmosphere, the sea and vegetation line make clear boundaries, and there are interesting nocturnal natural features to draw on.

Outlined below are a few activities that can be used on the beach at night with all age groups or a mix of ages. The messages are simple and should be understood by all and the fun appeals to primary, secondary and adults groups. Many of our favourite activities can be adapted to the beach at night. Some old classics even work better at night than in the day.

When developing the right mix of activities it is good to consider:

- the range of environmental messages you want to convey
- the physical nature of the beach, especially at the predicted tide
- natural features that can be used
- a range of active and quiet activities
- the physical and mental abilities of the group
- how friendly the group is.

What you need

Beach area, previously checked for hazards.

Individual activity lists include:

Elastic bands
Scissors
Torches
Cloth blindfolds
Some small items of little value.

What you do

Use the following activities in any sequence and with a group of up to 35. These instructions are provided for the teacher.

Nocturnal Fun on the Beach

1. Food Web

Messages: the interdependence of creatures and features, how impacts on the web of life affect all parts of the web

Need: net of large elastic bands, scissors, torch

Gather everyone in a circle around a torch set in the sand facing upwards. Spread a pre-made web of elastic bands (made by looping elastic bands together into a web structure) in the circle. Develop a marine 'web of life' by designating each person as a marine creature or feature, and connecting each to a section of the web by asking them to hold it. Discuss the connections between elements of the web. Ask everyone to stretch the web. Ask one to tug the web and the others to tug when they feel a tug. If one part of the web is affected it does not take long for all parts to be affected as well.

Pull out some scissors. Cut a non-structural thread of the web and watch its impact. Cutting one connection between components in the web may not have great impact but cutting too many or a really important one shatters the web. Threaten to cut several important ones, and then do it (ask them to shield their eyes). Watch them scatter.

2. Survival of the fittest

Messages: the fittest survive to reproduce, the fittest animal design will end up as the majority of a population

Need: cloth blind folds

Create three marine predators, for example, fish, by designating three pairs of people. One pair holds hands, one pair has a loose cloth tie between ankles, and the third pair has a one leg tied to a leg of the other. The three predators have various levels of fitness for catching prey. The other people are prey (e.g. anchovies) and can move in a designated area of the beach (use seaweed or drift wood for markers). If the group size is smaller than 12 then only use two pairs.

Have the predators chase and catch prey. They add the caught prey to themselves using the same connection technique they are using (e.g. holding hands). When two prey are caught they split off from the predator and become a new adult predator (pair) with the same fitness and chase prey. Continue until all prey is caught.

Next, group all resulting predators into the three levels of fitness. One group should have more adults. It is the fittest of the predators and has been most successful at passing on its genes to the next generation. One will be least successful and have few, if any, offspring. Each predator started as one third of the population and one will end up with greater than a third of the population. The fittest will thrive and the unfit may even die out.

3. No place like home

Messages: touch is a vital sense in the sea, the role of marking foraging ranges

Need: blindfolds

Pair off people and have one of each pair blindfolded. The blind person digs a hand width burrow in the sand and makes features in the sand to help mark it. Their partner leads them five metres away and spins them. The blind one must then find the burrow using touch (some use wave direction as a clue). The ability to find the burrow depends on a person's touch technique, their search pattern and their skill at creating features recognisable by touch.

When the blindfolded person has found their burrow the pair swap roles. When most have finished gather them around the remaining pairs and comment. To make it more difficult, demonstrate how confusing it can be if extra burrows are dug to change identifying features.

4. Whales and krill

Messages: how sonar works, whale food

Need: one or two blindfolds

A variation of bat and moth. Form everyone into a hand-holding ring. They are the land surrounding the sea. Place a few people inside the ring, they are krill. Blindfold one to become a whale. The whale must use sonar to find the krill. The whale calls out 'whale' and the krill must reflect the sound back by calling 'krill'. The whale must catch all the krill. The land may call back 'land' if the whale is threatening to beach itself. When all the krill are caught designate new whales and krill. If the whale is having trouble, shrink the sea by moving everyone in a step. A variation is to have two whales but they must reply to each others using a whale call (e.g. singing) or they will collide.

5. Find your dinner

Messages: techniques for searching for food, luck and skill are both useful

Need: small objects to lose

Lose one or more small objects on the beach and describe them as food (a person with a loose earing running around on the beach is an ideal way to lose something). Ask everyone to be an animal such as a goatfish or stingray and search for the food. Let them organise themselves to be most efficient at searching as individuals, and as a coordinated group. If they have trouble, and you planted the object, shrink the search area. Did the finder use luck or technique to find the food?

Nocturnal Fun on the Beach

6. Animal movements

Messages: animals are the summation of their parts, animals move in different ways

Need: blindfolds for everyone

Crab. Divide into groups of four. Two people stand beside each other, and link arms. Then they stand back to back with another pair. Each person links their outer arm with the person behind them, making a solid group of four people each with their back against someone else. Keeping backs against each other, the group members walk their feet forwards for 40 cm, squatting to keep their backs together. When balanced, ask the group to walk sideways like a crab. Hopefully your crab is well coordinated (people with dubious backs or legs should not attempt this one).

Sea slater. Line everyone up one behind each other and ask them to blind-fold the person in front and then hold their waist. Each person is a body segment of a sea slater. They can feel with their legs but cannot see. The leader is at the head (without blindfold as the head has eyes) and leads them on a merry walk. Messages may be passed back via the nervous system (Chinese whispers). Try plenty of turns, stepping over things, going close to the water, and ducking under things (real or imaginary).

Sea cucumber. While everyone is still in position as a sea slater ask them to hold the waist of the person in front of the person in front. This makes the animal much more compact and the people more friendly. Lead them on another walk. People will soon realise that sea cucumbers are much less flexible than sea slaters!

Wrap up

Always finish an activity with a wind down. A few minutes listening to the sounds of the sea, looking at phosphorescence in the water or star gazing gives the chance to remind people of a few take home messages.

Survival

Level

7+

Key questions

What are the most important things we need to survive?

What are the most important actions to take to survive after a shipwreck?

Key outcome

To develop and decide upon a group strategy about survival on a desert island.

Adapted from *Project ReefEd*, GBRMPA, 1998, Activity 117, and from *Outback! A team adventure*, a team training course by Organisation Design and Development, 1995.

This is a good evening activity for field camps and could follow fieldwork about marine life. This version is one of many used by groups.

What you need

Scenario sheet for each group
Action table for each individual
Pencils

What you do

1. Divide into roughly equal sized groups. Each group is given the same scenario. Each individual completes the individual ranking table for the most important items, ranking each item in order of their importance to the individual. No discussion! The most important item is one, the least is 10. Then repeat the process with 'actions taken', ranking the actions in terms of group survival.

2. The small group discusses the ranking and attempts to reach a consensus about the rank of the items, and the most appropriate action order, again in terms of survival of the group.

3. The whole group compare notes, discussing the item ranking and the reasons behind these, and the action ranking with the reasons behind these.

4. Discuss the results. Which individual was closest to the team ranking in both rank orders? Which item caused the most disagreement in ranking?

5. Discuss your decision-making process. Was everyone's opinion taken into account? Did you consider all possibilities in making the decisions?

Scenario

You are a member of a school field trip to study an island off the coast. You are eight hours out of port when your launch is overturned in a freak wave and sinks. The crew and teachers drown. The rest of you manage to swim to a nearby island and land on the beach about 11 am in the morning. You know the mainland is at least 90 km away. You also realise that your group will not be missed for at least 20 hours as your first radio call back to base was not planned until he evening of the next day. It may take at least three or four days before a

launch or plane spots you. To make matters worse, one of the group has a severe gash on his leg, which is bleeding, and has to be helped up the beach.

The island is rather barren and dry. You heard from the last weather report that the temperature is likely to be 35• Celsius, with no immediate rain forecast. You are all dressed in lightweight summer clothing and sandshoes, but only half the group are wearing hats. When you collect on the beach, you pool everything each individual was carrying and the list is as follows.

Sheet 1. Items rescued:

Item rescued	Your ranking	Team ranking	Difference
Mirror in plastic case			
Large sheet of light blue plastic			
Book Marine Animals of Australia			
One cigarette lighter			
First aid kit			
Three canteens, each with three litres of drinking water			
Folding knife (60 mm blade)			
One packet of bread in plastic bag			
Small bottle of rum			
Chart of the sea area			

A second sheet containing an Action Alternatives List is on the next page.

Following the game

The next day in the field, each group could be responsible for 'making' freshwater using a solar still, or distillation from boiling salt-water, or by transpiration (by tying plastic bags over leaves to collect water), or extract water from cut tree branches (not if you are in a national park!)

- How much water is collected in one day?
- Would it be enough to drink?

References

Further bushcraft suggestions are contained in Donlevy, M., 1991, *Stay Alive*, AGPS, Canberra.

Sheet 2. List of Action Alternatives

Action alternatives	Your ranking	Team ranking	Difference
Assess your food and water supplies and decide what to do			
Build a fire			
Stay put and conserve energy whenever possible			
Give first aid to the injured			
Discuss how you will work as a team to save yourselves			
Make a raft to hold three people and sail for help			
Select a camp site in the shade			
Search for edible fruit, seaweed and marine animals			
Create a distress signal on the ground that can be seen by potential rescuers			
Devise a means for collecting drinking water			