

Activity 12: Environmental action for our estuaries



Let's see how you can contribute to a positive future for our estuaries



CURRICULUM LINKS

| Learning areas | Learning intentions | Success criteria |
|--|--|--|
| <p>Science: Levels 1–4</p> <ul style="list-style-type: none">Technology: Technological Practice: Brief development.Nature of Science: Participating and contributing. <p>Science capabilities</p> <ul style="list-style-type: none">Use evidence.Interpret representations.Engage with science. <p>Minor curriculum links</p> <ul style="list-style-type: none">Technology: Technological Practice: Planning for practice; Outcome development and evaluation. | <p>Students are learning to:</p> <ul style="list-style-type: none">identify an environmental action that will target an issue for their local estuary and is relevant to their research, observations and learning inquiryuse appropriate tools and resources to plan and carry out successful, meaningful actionevaluate and review the effects of their action. | <p>Students can:</p> <ul style="list-style-type: none">record ideas relating to planning for action, including setting criteriaparticipate in informed action for estuariesreflect on their brief and criteria to evaluate the success of the action. |

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BACKGROUND NOTES

WHAT IS ENVIRONMENTAL ACTION?

Environmental action is a learning process that involves students in the planning and implementation of a project to address an issue that is related to the environment and sustainability. Examples of potential actions include habitat restoration for native species, awareness raising through videos or blogs, reducing climate change, targeting animal or plant pests, addressing the cause of pollutants or litter, joining a local restoration group, and contributing to community group discussions or consultations.

ACTING FOR THE FUTURE OF OUR ESTUARIES

Learning about the current status of a local estuary often motivates students to address an issue they have encountered. Our estuaries are currently facing many issues, such as sedimentation, pollution, deforestation and habitat destruction. The chosen action should be relevant and appropriate for your local situation. Communities and schools can become involved in the protection and enhancement of estuaries and can contribute to authentic positive changes for the future health of the environment.



Habitat restoration volunteers at Waikouaiti Estuary.
Photo: Patti Vanderberg

WHY PARTICIPATE IN ENVIRONMENTAL ACTION?

Leading and participating in environmental action can be an empowering and inspiring experience for students, assisting them to become informed, active participants in society both now and into the future. Environmental actions have significant positive effects, such as enhancing the health of estuaries, raising awareness about estuaries or contributing to a positive future for a threatened species.

HOW DO WE CHOOSE WHAT TO DO?

Environmental action is a natural progression from an authentic learning inquiry. The chosen action should primarily make a difference for a focus issue (preferably addressing its root cause) and should contribute to a positive future for that issue. Student-led decision-making and processes can increase their enthusiasm and engagement. When choosing a suitable action, students will need to consider the needs and opinions of other groups of people in the community, as well as the available time and resources. Observations and results from the inquiry will also need to be considered. A decision-making tool may help to select which action will be most effective to address a particular issue.



BACKGROUND NOTES

EXAMPLES OF ENVIRONMENTAL ACTIONS FOR ESTUARIES

| Observation and environmental issue to target | Possible action | Monitoring your action |
|---|---|---|
| <p>Observation: <i>There is a lack of trees/vegetation around the estuary.</i></p> <p>Issue: <i>No shade and warmer water.</i></p> | <p>Plant native shrubs, trees and grasses.</p> | <ul style="list-style-type: none"> Survey the plants in the area (eg through line transect surveys or tree counts). For more information, see  DOC's Experiencing native trees in your green space resource. |
| <p>Observation: <i>Animal pests / introduced predator tracks have been identified in the estuary.</i></p> <p>Issue: <i>Pests are competing with and harming our native birds, decreasing their numbers.</i></p> | <p>Track introduced predators</p> | <ul style="list-style-type: none"> Use tracking tunnels to find out which pests are in your area. For more information, see  DOC's Investigating introduced predators in your green space resource. |
| | <p>Identify native birds</p> | <ul style="list-style-type: none"> Carry out a bird survey to find out which birds are living in your area. For more information, see  DOC's Experiencing birds in your green space resource. |
| <p>Observation: <i>Lots of weeds are around the estuary instead of native plants.</i></p> <p>Issue: <i>Weeds are competing with native plants, which are becoming less common.</i></p> | <p>Plant native trees for food and habitat.</p> <p>Work with others to control weeds.</p> | <ul style="list-style-type: none"> Survey weeds / pest plants in the area (eg through line transect surveys or tree counts). For more information, see  DOC's Investigating weeds in your green space resource. |



BACKGROUND NOTES

| Observation and environmental issue to target | Possible action | Monitoring your action |
|---|--|--|
| <p>Observation: <i>Few native fish such as īnanga are in the estuary. There isn't much whitebait!</i></p> <p>Issue: <i>Īnanga are unable to breed in the estuary due to loss of habitat / fewer plants on the stream/estuary margins.</i></p> | <p>Install straw bales and plant to provide breeding habitat.</p> | <ul style="list-style-type: none"> Survey for īnanga eggs and adult fish (you may need help from an expert with this). See the DOC website for details.  Straw bales as temporary inanga spawning habitat |
| <p>Observation: <i>Lots of wrappers, plastics and fishing waste were found during a litter audit.</i></p> <p>Issue: <i>Rubbish/pollution in the estuary is affecting native animals.</i></p> | <p>Find the source of plastics and litter and reduce this by communicating with others and undertaking clean ups.</p> | <ul style="list-style-type: none"> Carry out litter surveys – see the Sustainable Coastlines website.  Sustainable Coastlines – Education Undertake water sampling. Complete this Young Ocean Explorer assignment to find out how you can help beat plastic pollution in estuaries.  Young Ocean Explorers – Beat plastic pollution |

CAN SCHOOLS MAKE A DIFFERENCE TO AN ENVIRONMENTAL ISSUE?

With targeted action, schools can make a significant impact on their local estuary and the wider catchment. Several examples of very successful school actions are provided on page 13, which illustrate how students around New Zealand have made a positive difference to our estuaries. No environmental action is too small – every small action helps.



BACKGROUND NOTES

A COLLABORATIVE COMMUNITY APPROACH TO ENVIRONMENTAL ACTION

Environmental action is most effective and far-reaching when it is collaborative – across organisations, groups and schools. This is because the whole community and their actions affect our environment, waterways and estuaries.

DOC is working with the wider community on an exciting project to restore the Waimea Inlet, adjacent to the city of Nelson. Schools are working with DOC, landowners, councils and other groups to restore the vegetation and animals that are native to the inlet. For further details, visit the DOC website.

Waimea Inlet restoration project

A number of schools are participating in the restoration of the Waimea Estuary – please contact Tasman District or Tasman Environmental Trust for the latest contact information.

Check with your local council, DOC and other environmental organisations to determine how your action might fit into the bigger picture for your area.

REVIEWING AND REFLECTING ON YOUR ENVIRONMENTAL ACTION

Reviewing environmental actions can be helpful for learning and thinking about future monitoring and action. This can be especially beneficial when encountering setbacks. Reflecting is helpful at any stage of your project and is most helpful when carried out at regular stages along the way.



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Activity 12: Environmental action for our estuaries
PROTECTING OUR ESTUARIES

LEARNING EXPERIENCE 12: ACTION FOR ESTUARIES

Resources for this activity

- DOC's Restoring estuaries map.
 - 🔗 Restoring estuaries
- Template 📄 *Brief for action* (page 17).
- Template 📄 *Action plan* (page 18).
- Google Sheets template Weekly action plan.
 - 🔗 Weekly action plan template
- New Zealand Marine Studies Centre's Marine Metre Squared project website.
 - 🔗 Marine Metre Squared

Vocabulary

Action, outcome, community, kaitiakitanga, kaitiaki, brief, criteria, reflection, decision, monitoring.

Links

To open the links throughout this resource without losing your place in the document, follow either of these steps:

- Right click on the link and click **Open Hyperlink**. Now the link will be opened in new tab.
- Hit the **Ctrl** key while you left click the link. This will also force the browser to open the page in a new tab.

Either of these methods will open the link in a new tab leaving the teaching resource open.



Focus question
How can you
address an issue
to make a positive
difference for
your estuary?



INTRODUCING STUDENTS TO TAKING ACTION FOR AN ESTUARY

Note: These learning experiences are suggestions only. Teachers are encouraged to adapt and change the material to suit their students' needs and interests.

Inquiry stage 1: Planning for action



Review the main focus issue for your estuary

- Reflect on your inquiry and research to understand the context for action.
- Ensure that you have a positive future in mind when planning for action (see  *Activity 11: The future of our estuaries*).
- Review the causes of your focus issue and discuss how you could address these causes.

Who is already working to restore your estuary?



- Find out who is working to restore estuaries in your area and if there are any catchment-wide approaches in your region by checking DOC's Restoring estuaries map.
 Restoring estuaries
- Check with local councils and agencies to see if a wider plan for your estuary is already in place and to determine how your action might fit into the bigger picture for your area.
- Find out if people in your community are already doing something about the issues for your estuary. Can students collaborate with other groups who are working in the estuary? *Consider factors such as who could add value to your action? Do people you know have strengths that would enhance your action?*
- Contact iwi and inform the wider community about your findings and ideas before you plan for action. How can students work with kaitiaki (guardians)? There may be an opportunity for students to support kaitiaki and learn more about kaitiakitanga (guardianship) from a practical perspective.



Deciding on an environmental action

Sustainable action

A successful, ongoing action should bring about positive changes in all aspects of sustainability (environmental, social/political, cultural and economic).

| Aspects of sustainability to consider | | | |
|---|---|--|--|
| Environmental | Social/political | Cultural | Economic |
| <ul style="list-style-type: none"> How will the environment be enhanced by your action? Which animals and plants will benefit from this action? | <ul style="list-style-type: none"> How will different groups of people be affected by this action? How can this action contribute to bringing people together and enhancing peoples' lives? | <ul style="list-style-type: none"> What unique cultural aspects can you include in your action? Does the action support Māori perspectives and tikanga (customs)? What other cultural knowledge can contribute to your action? | <ul style="list-style-type: none"> How can this action enhance local business opportunities? How can businesses and the wider community contribute to this action? |

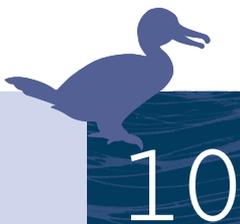
Student considerations for possible environmental actions



- Which actions come to mind after reflecting on your inquiry?
- Which actions would contribute to your positive vision of the future?
- Will the action address the issue?
- What environmental restoration work has already been carried out in your area? Is there a way you can contribute to what is already happening rather than starting a new action project?
- Can you learn from past/present contributions? (What has been achieved? Who was involved? How do they know their action was successful?)
- What are the possible actions? (Brainstorm and make a list of possible environmental action ideas.)

Tools to help choose the most effective action

- Set several criteria to assess the success of an action. Criteria are principles or standards that will help to make your action successful. Examples of criteria are given in the table below.
- Complete a decision-making grid or similar about each action option to determine which is the most suitable choice (see example below).



Decision-making grid example

| Action options | Criteria for a successful action (add up to 3 ticks for each criterion) | | | | | |
|--|---|--|---|---|--|--------------------------------------|
| | Will this action make a difference to the focus issue and its causes? | Will we learn something new by choosing this option? | Do we have the necessary resources for this action or can we get them easily? | Will this action involve our wider community and local iwi? | Do we have some prior knowledge and relevant experience that will assist us? | Total score (out of a maximum of 15) |
| Plant around the estuary (to provide native fish breeding habitat) | ✓✓✓ | ✓✓ | ✓ | ✓✓✓ | ✓✓ | 11 |
| Design ways to minimise disturbance to native fish such as īnanga (eg making a sign about īnanga breeding to be placed at the estuary) | ✓✓ | ✓ | ✓✓ | ✓ | ✓ | 7 |
| Your action ideas: | | | | | | |

Note: Your action options and criteria will vary according to your focus issue, vision and goals.

Creating a brief

A brief explains what is going to be done and why. The brief tells you what the action will look like and how it will function.



- Complete a brief that will help to keep you on track – see page 17 for an example template.





Time for environmental action

- It is now time to bring your plans and ideas into reality to make a real difference for your estuary and environment. Students can use their planning and brief to help implement a successful action project, with the help of their community.
- Remember to take photos and record your actions as you go for later reflection, sharing and measuring. Refer to your brief and criteria to monitor your action and make sure it is on track for success.



Orokonui Estuary planting day.
Photo: Lucy Hardy

EXAMPLES OF EFFECTIVE ACTIONS FOR ESTUARIES

Target issue: A species in danger

Rahotu School's Dotterel Defenders

Students from this Taranaki school have been working collaboratively with community groups and iwi to make a difference for the New Zealand dotterel – a threatened shorebird species in their area. Read about their sign-making, monitoring, planting, trapping and other efforts to protect dotterels on the Taranaki Conservationists' website.

 Dotterel Defenders smashing it in September

Target issue: Īnanga under threat

Īnanga spawning whitebait restoration project – Mountains To Sea Conservation Trust (MTSCT)

School students from Wainuiomata spent their spring learning all about the life cycle of Īnanga, what threatens them and what they could do to help increase the population in their local area with the Whitebait Connection programme. For more information, visit the MTSCT website.

 Īnanga Spawning, Whitebait restoration project – Wainuiomata Coast

Partnerships restoring whitebait numbers in Northland

Fonterra, Maungaturoto Primary School, Otamatea HarbourCare and Whitebait Connection are carrying out planting to help create an environment where aquatic life, especially whitebait, can thrive in Northland. For further information, visit the Fonterra website.

 Partnerships helping to restore Northland whitebait numbers



Message in a movie

Whakatapuranga Productions made this Outlook for Someday film about protecting inanga to help people understand the challenges these native fish face.

▶ Inanga - Whakatapuranga Productions

Target issue: Rubbish and pollution in stormwater washing into estuaries

Murals in Titahi Bay (MTSCT)

Students from Titahi Bay Intermediate School noticed that rubbish was entering their harbour while out snorkelling. They set out to inform people about the problem by creating public murals on stormwater drains. For further information, visit the Mountains to Sea Conservation Trust website.

🔗 Titahi Bay stormwater mural



Image courtesy of Te Kawa Robb and Mountains to Sea Wellington

Stormwater pollution and rubbish (MTSCT)

Students from Wilford School in Petone looked at options and took action to stop litter entering their waterways and Lowry Bay. They investigated their local issue of rubbish and stormwater pollution and then installed 'Litta traps'. For more information, visit the Mountains to Sea Conservation Trust website.

🔗 Kaitiaki Stormwater Action Project. Jackson Street Petone

Also see the article 'Down the drain' from *Connected*, Level 2 (2017).

🔗 Down the Drain by Philippa Werry

Other examples

Details about other inspiring projects that are enhancing the health of our estuaries, streams and marine environment can be found on the Mountains to Sea Conservation Trust website.

🔗 Guardianship and restoration



REFLECTING ON YOUR ACTION

Next steps

Now that you have achieved a successful action, it doesn't have to stop there. Find out how your students are thinking and feeling about your action and results.

- How did your action go? What were the outcomes of your action?
- What would you do differently next time?
- What is the next step for your environmental journey?
- How can you thank the people who helped with your planning, monitoring or implementing?

Measuring and monitoring the action

- Is there a need to carry on your action project? How could you sustain the action/project and involve others?
- How did you measure/monitor change resulting from your action? (For example, water testing, a bird survey, tracking tunnels, invertebrate monitoring.) Keep records of your monitoring for future reference and funding opportunities.
- Did you achieve what you hoped to achieve? Look at your brief to see if you met the criteria for success.

Share successes

- Celebrate your action success with a community event or public announcement. Share your story with local media or on social media.
- Share your conservation action journey and resulting successes by entering the DOC Habitat Heroes competition.

 [Habitat Heroes](#)

OTHER RESOURCES RELATING TO ENVIRONMENTAL ACTION

- DOC's *Restoring estuaries* map.
 [Restoring Estuaries](#)
- DOC's *Tools for environmental action* resource.
 [Tools for environmental action](#)
- Te Kete Ipurangi's (TKI's) *Education for sustainability* resources (includes an alternative action planning template).
 [Education for sustainability tools and resources](#)
- Mountains to Sea Conservation Trust *Kaitiaki Projects* webpage.
 [Guardianship and restoration](#)



- The Outlook for Someday website.
 - 🔗 The Outlook for Someday: Young People + Film + Sustainability
- The Mountains to Sea Conservation Trust Whitebait Connection website.
 - 🔗 Whitebait Connection
- The Nature Space website (allows you to connect with community environmental groups near you).
 - 🔗 Nature Space
- DOC's *Mātauranga Whakauka Taiao: Environmental education for sustainability strategy and action plan*.
 - 🔗 Environmental education for sustainability strategy and action plan
- Enviroschools wai/water webpage.
 - 🔗 Enviroschools - Wai/water
- TKI's Technology Online *Live planning* video.
 - ▶ Planning for practice - Live planning
- DOC's *Waimea Inlet restoration* guide.

This resource contains information on how to restore estuaries, using the Waimea Estuary as a model. The information provides a rich tapestry for teachers and students to get involved with research and hands-on action for restoration.

- 🔗 Waimea Inlet restoration





| Brief for action | |
|---|--|
| The environmental action we have chosen is: | How will this action help to solve the focus issue? |
| What is our goal for action? | What are our criteria for success? The action needs to: <ul style="list-style-type: none"> ▪ ▪ ▪ |
| What makes our project unique and how do we feel about it? | |
| Who might be able to help? | |
| Key steps in our action project: <ol style="list-style-type: none"> 1. 2. 3. | |
| How can we measure/monitor our success? | |

Google Docs version:  Brief for action template.





| Action plan | | |
|--------------------|------------------------------|------------------------|
| What we will do: | | Why we are doing this: |
| Step number | Details of step | Timeframe |
| 1 | | |
| 2 | | |
| 3 | | |
| 4 | | |
| 5 | | |
| Resources | | |
| Materials we need: | Where we could source these: | Cost: |
| | | |
| | | |
| | | |
| | | |
| | Total cost | \$ |
| Skills needed: | Knowledge required: | Who could help? |
| | | |
| | | |
| | | |
| | | |

Google Docs version:  Brief for action template.

