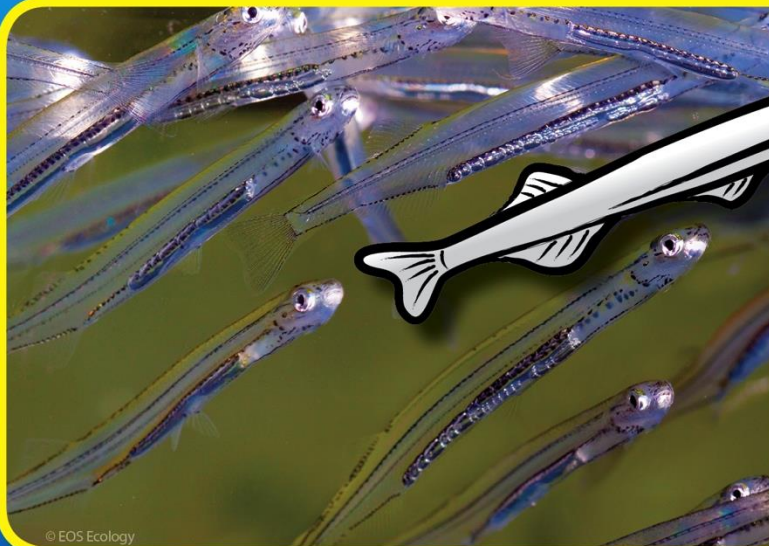


National Inanga Spawning Education Programme



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Inanga/Whitebait

What • Where • Why • How

Presented by:



The National Inanga Spawning Education Programme is supported by...



AQUATIC SCIENCE &
VISUAL COMMUNICATION



today we'll discover...

WHAT  *are whitebait/inanga*

WHERE  *they live & like to lay
their eggs*

WHY  *numbers are declining*

HOW  *we can help them*

WHAT are whitebait/inanga



'WHITEBAIT' = collective term for juvenile stage of 5 species of fish (Galaxiidae)

'INANGA' = adult stage of 1 of the 5 whitebait species (Galaxias maculatus)

INANGA are the smallest, growing no longer than 110 mm

our 5 whitebait species

	extinct
nationally threatened	critical
	endangered
	vulnerable
at risk	declining
	recovering
	relict
	naturally uncommon
	not threatened



inanga

	extinct
nationally threatened	critical
	endangered
	vulnerable
at risk	declining
	recovering
	relict
	naturally uncommon
	not threatened



shortjaw kōkōpu

	extinct
nationally threatened	critical
	endangered
	vulnerable
at risk	declining
	recovering
	relict
	naturally uncommon
	not threatened



kōaro

	extinct
nationally threatened	critical
	endangered
	vulnerable
at risk	declining
	recovering
	relict
	naturally uncommon
	not threatened



banded kōkōpu

	extinct
nationally threatened	critical
	endangered
	vulnerable
at risk	declining
	recovering
	relict
	naturally uncommon
	not threatened

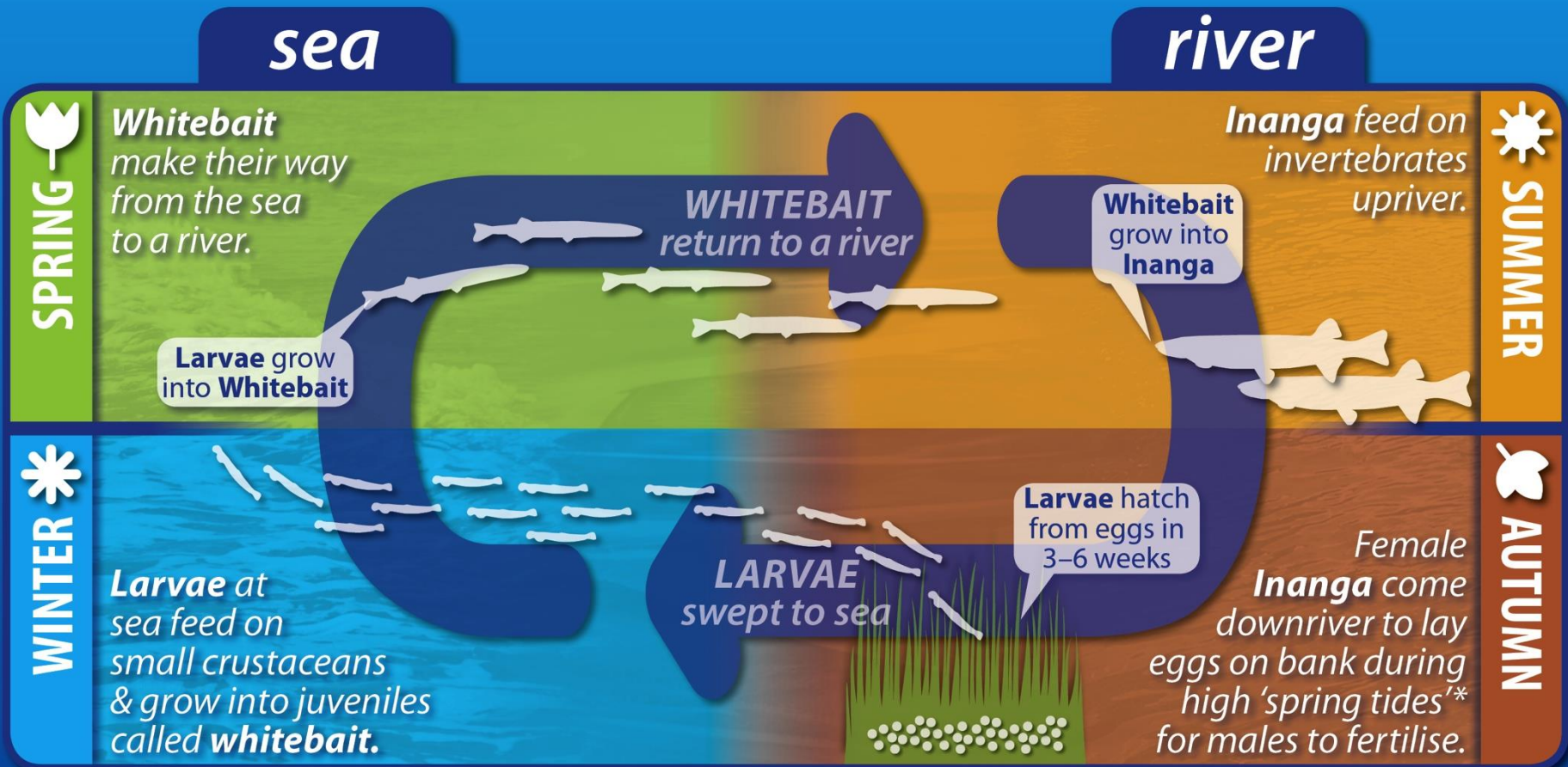


giant kōkōpu

inanga **CAN'T**
climb barriers...
unlike the other
4 species

life cycle

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* **SPRING TIDE** – a tide just after a new or full moon, when there is the greatest difference between high & low water

life cycle

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whitebait
larvae



inanga
eggs



eggs

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photo © EOS Ecology / Shelley McMurtrie

egg stage



- lay 1,500–3,000 eggs at a time
- each 0.8–1.25 mm in size
- laid late summer/autumn
- laid during high 'spring tide, safe above normal river flow height
- laid at base of long grass
- hatch after 1 month



larvae

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larvae stage

- 7 mm long when hatched
- high 'spring tide' currents wash them to sea
- feed on yolk sac for first week
- then feed on small plants & animals (phytoplankton & zooplankton)
- live at sea for up to 6 mths
- most don't survive



larvae natural predators

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fish *jellyfish*

mmmm...
TASTY!



whitebait

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whitebait stage

- 6-month old juveniles*
- swim in large groups (shoals) & with other species for safety*
- find way to rivers by smelling the freshwater*
- swim upriver, but weak swimmers – can't climb*
- most don't survive*



whitebait natural predators

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fish *birds*



inanga

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inanga stage

- adult of species*
- mature in river for about 6 months*
- stay in groups*
- don't go as far upriver as some species*
- ready to spawn – 1 year*
- most don't survive*



inanga natural predators

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birds *eels*



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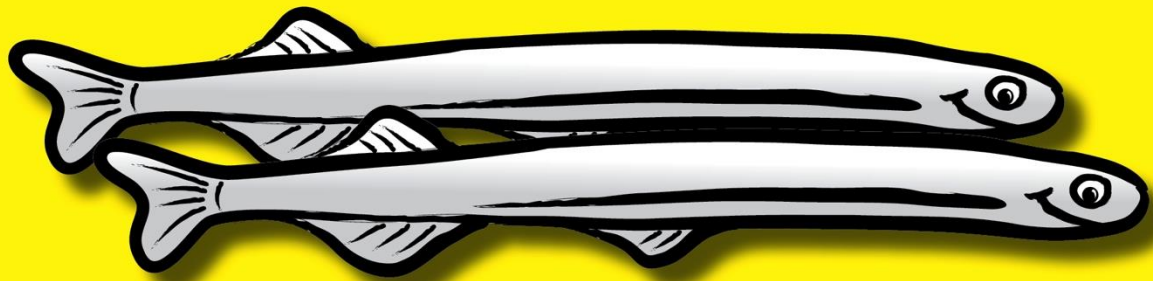
inanga spawning

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www.whitebaitconnection.co.nz

***WHERE inanga
like to live & lay
their eggs***



home
sweet
home!

WHERE inanga live

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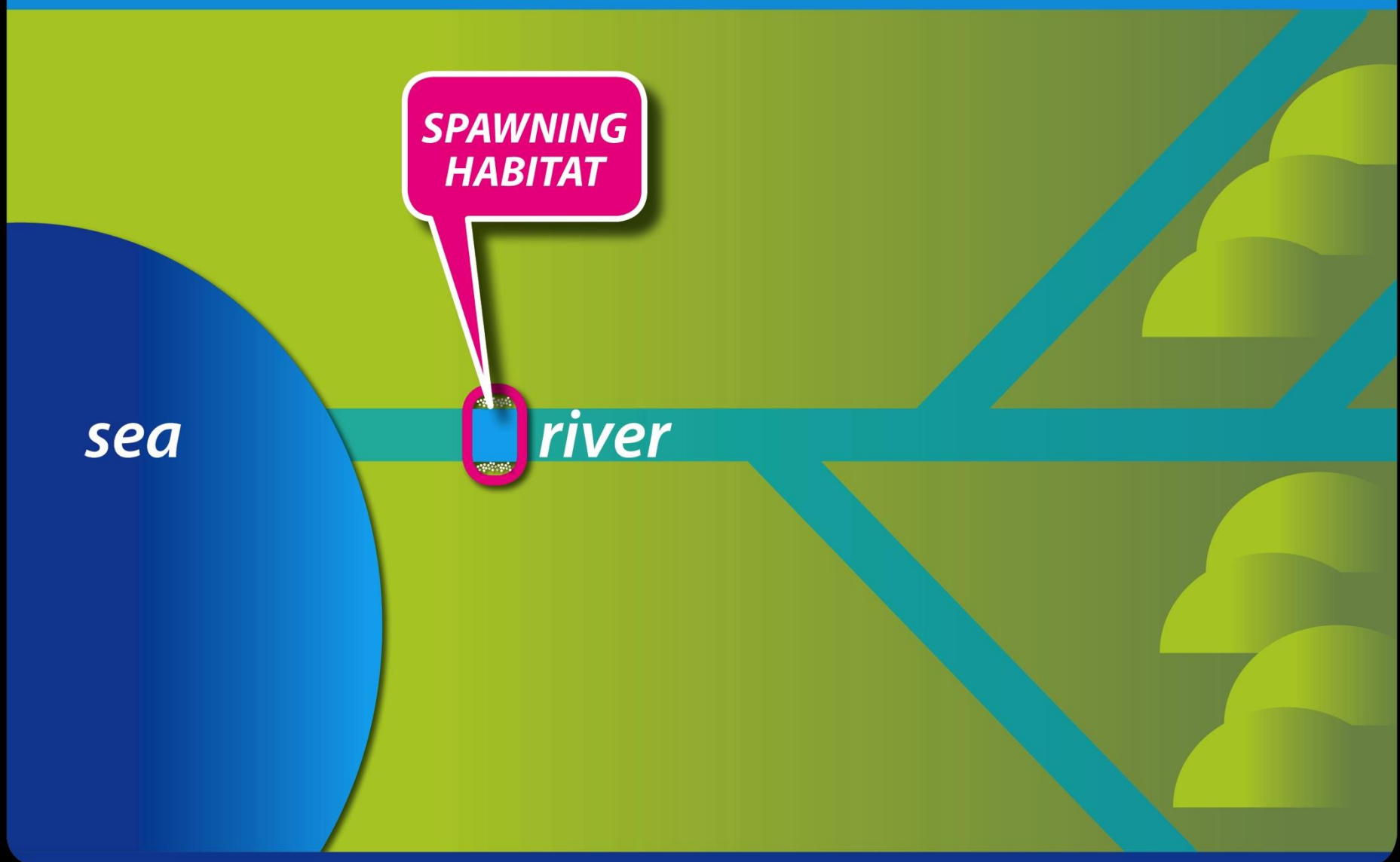


sea

river

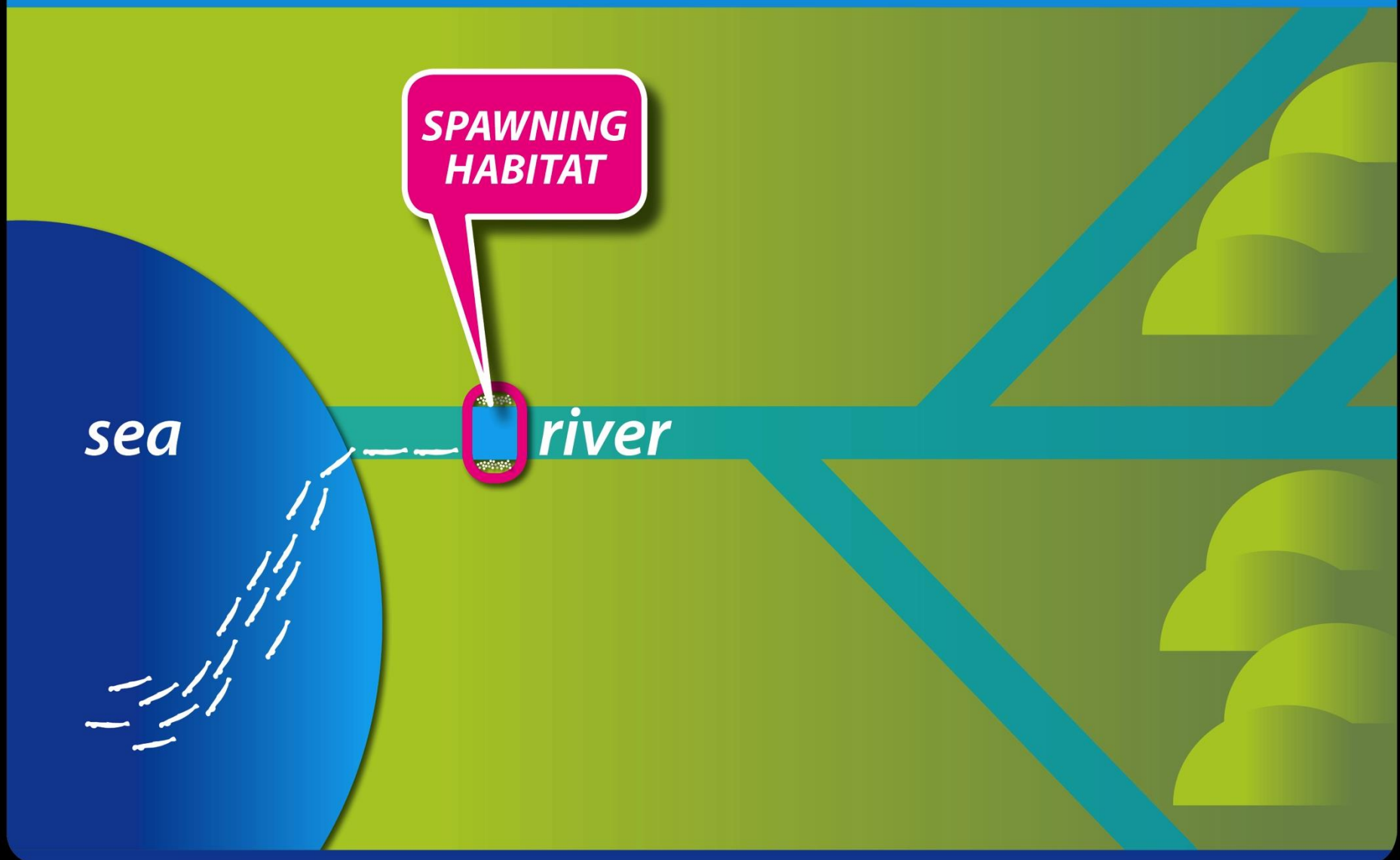
WHERE inanga live

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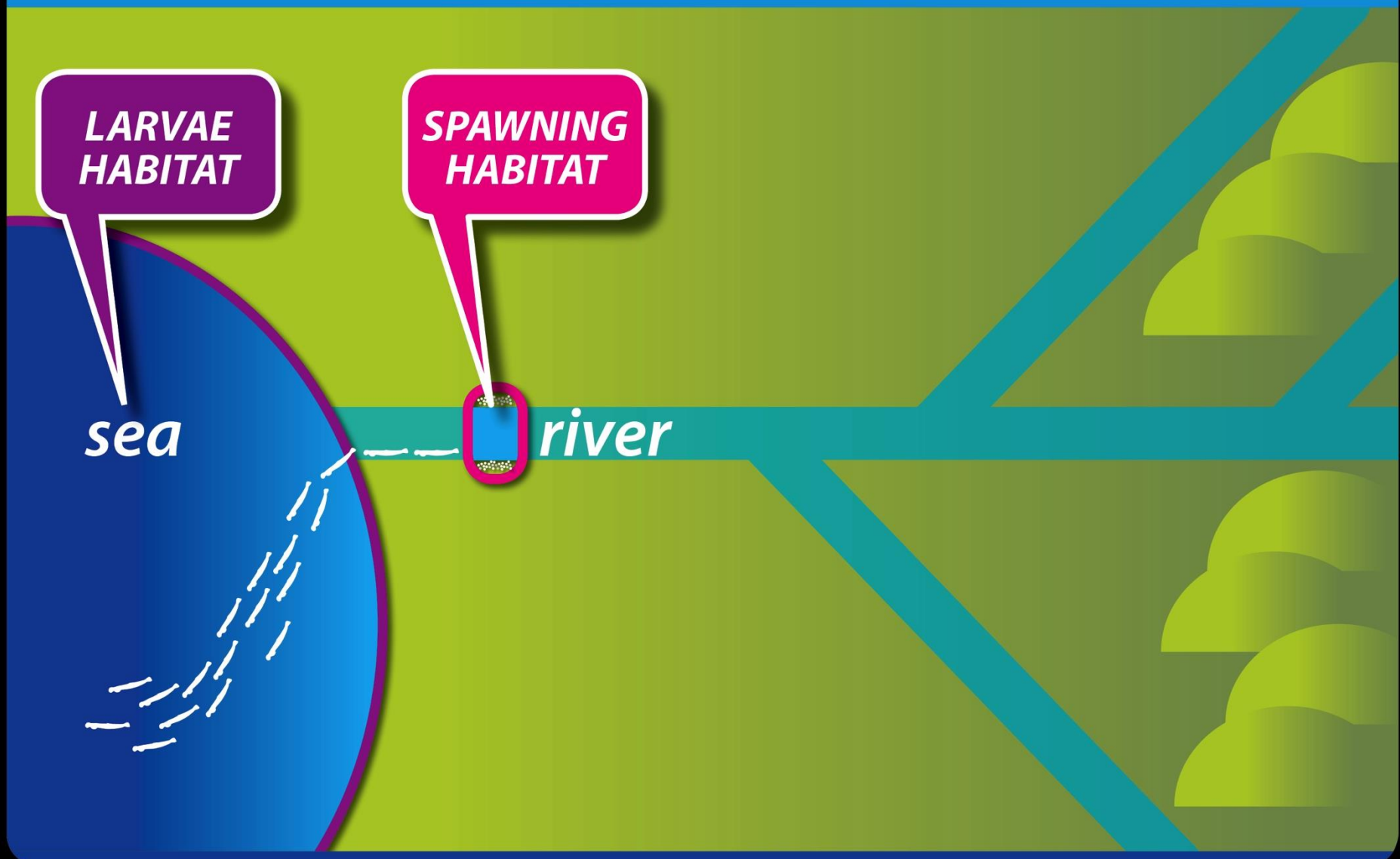


WHERE inanga live

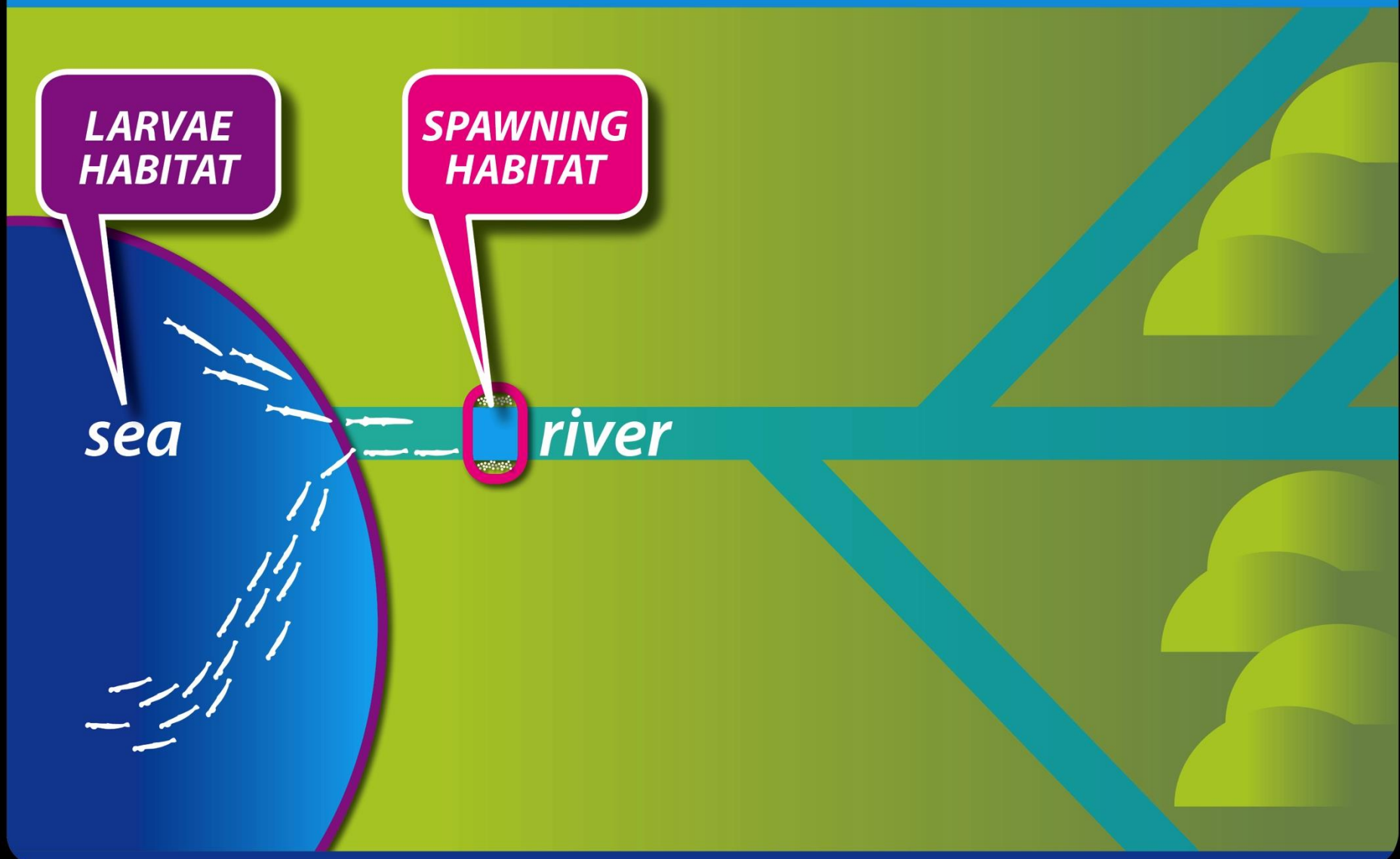
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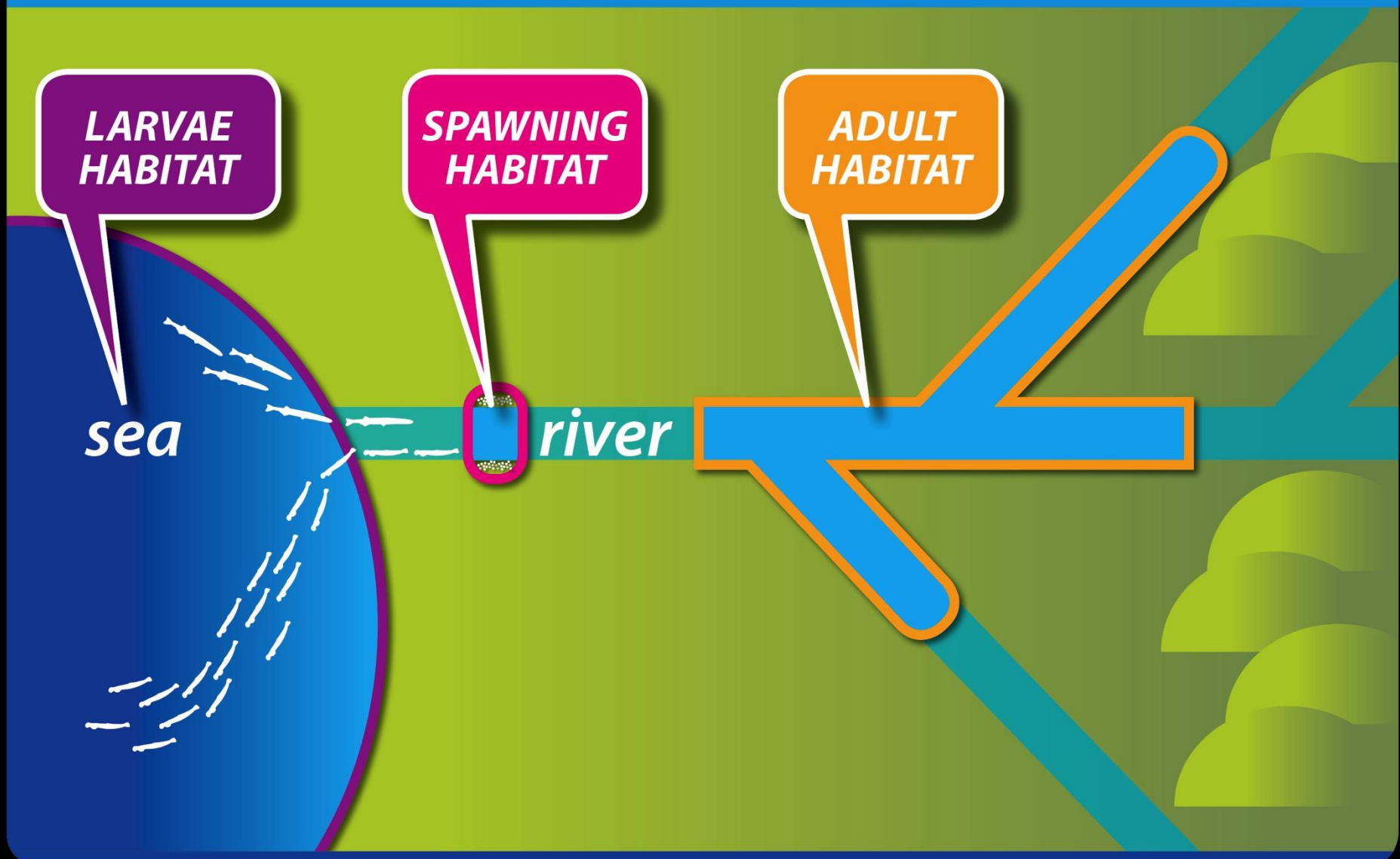
WHERE inanga live



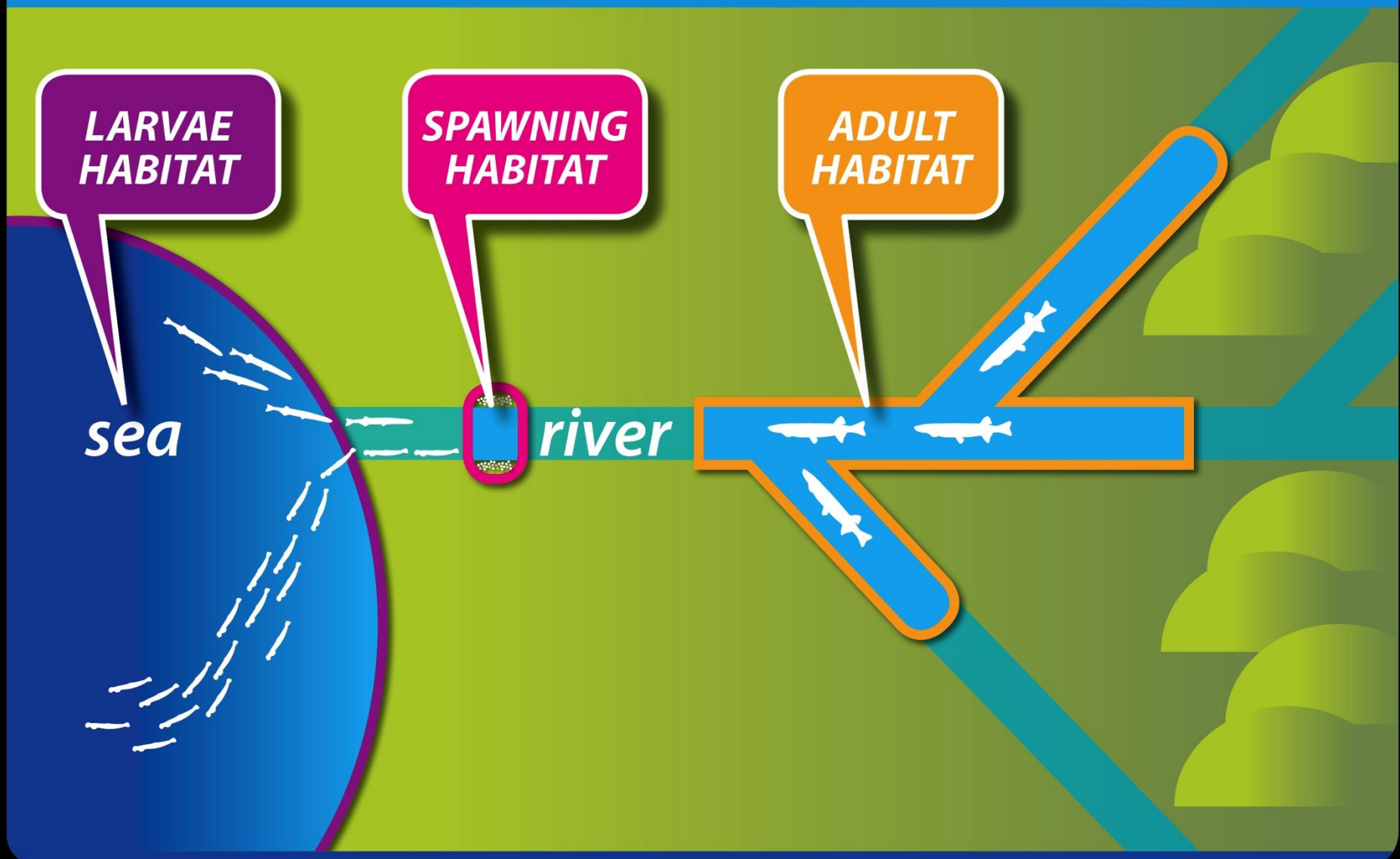
WHERE inanga live



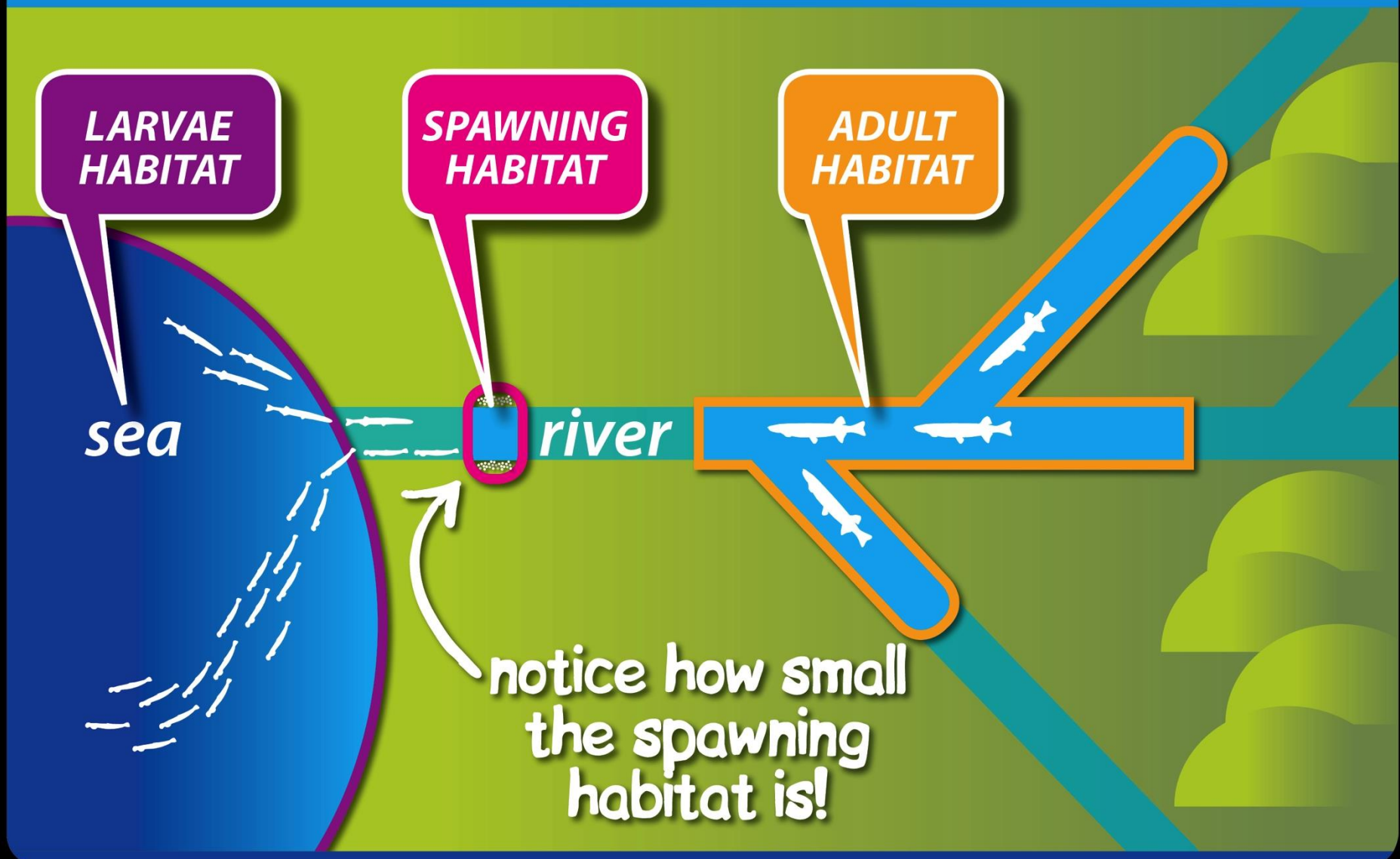
WHERE inanga live



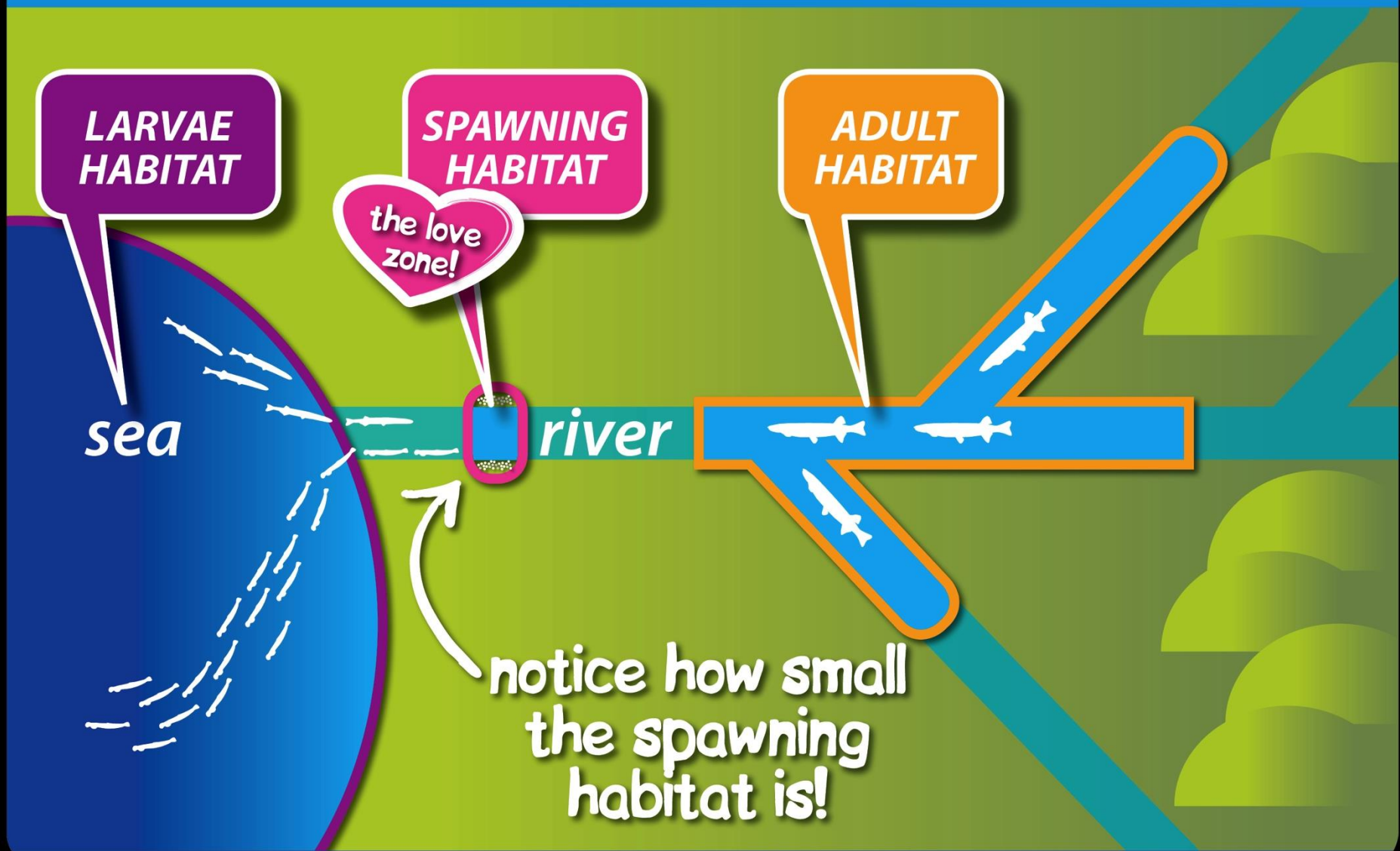
WHERE inanga live



WHERE inanga live

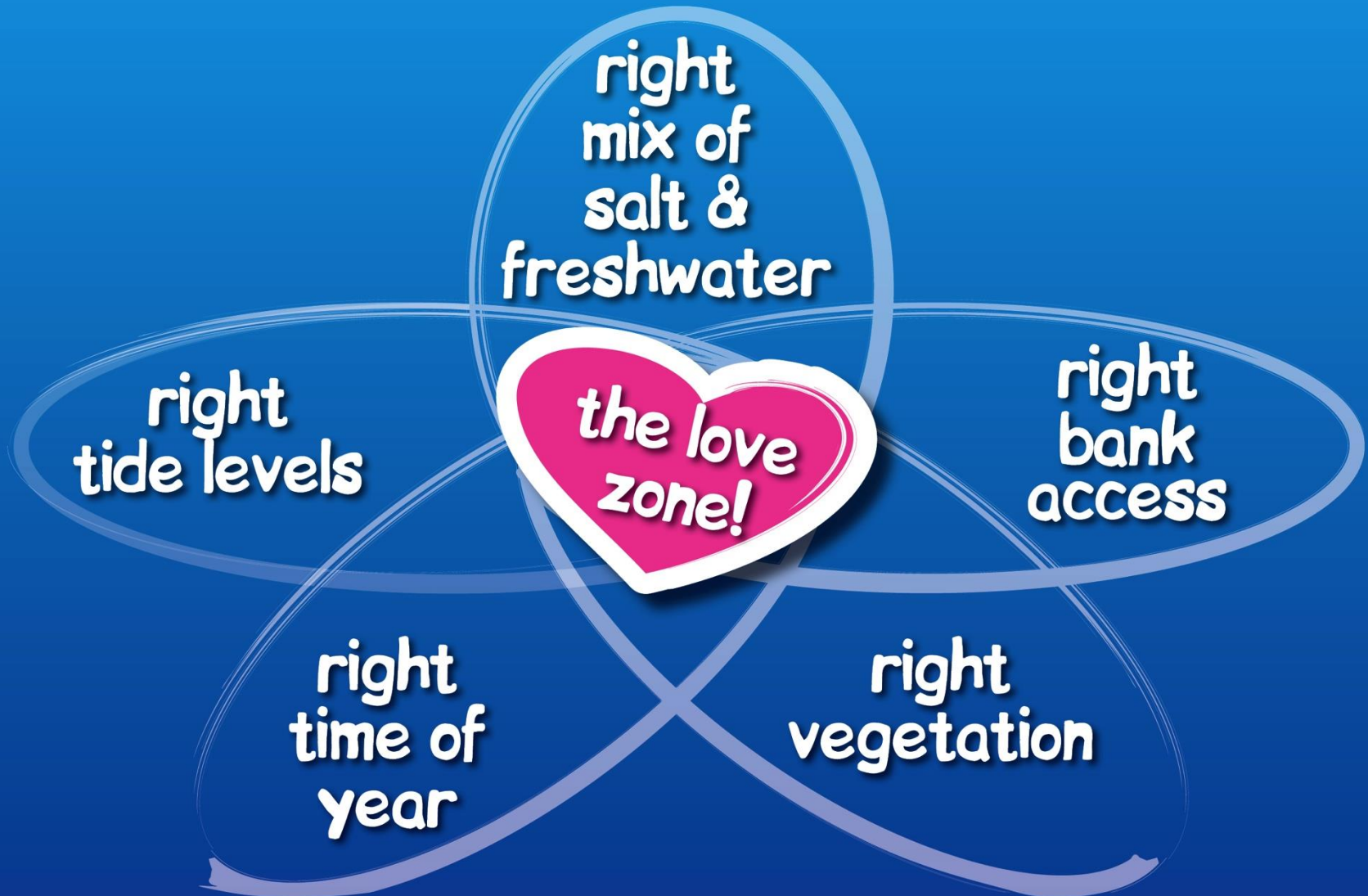


WHERE inanga live

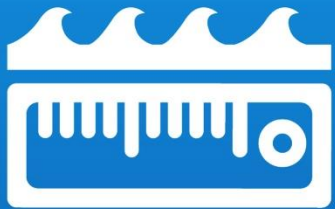


WHERE inanga spawn

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WHERE inanga spawn



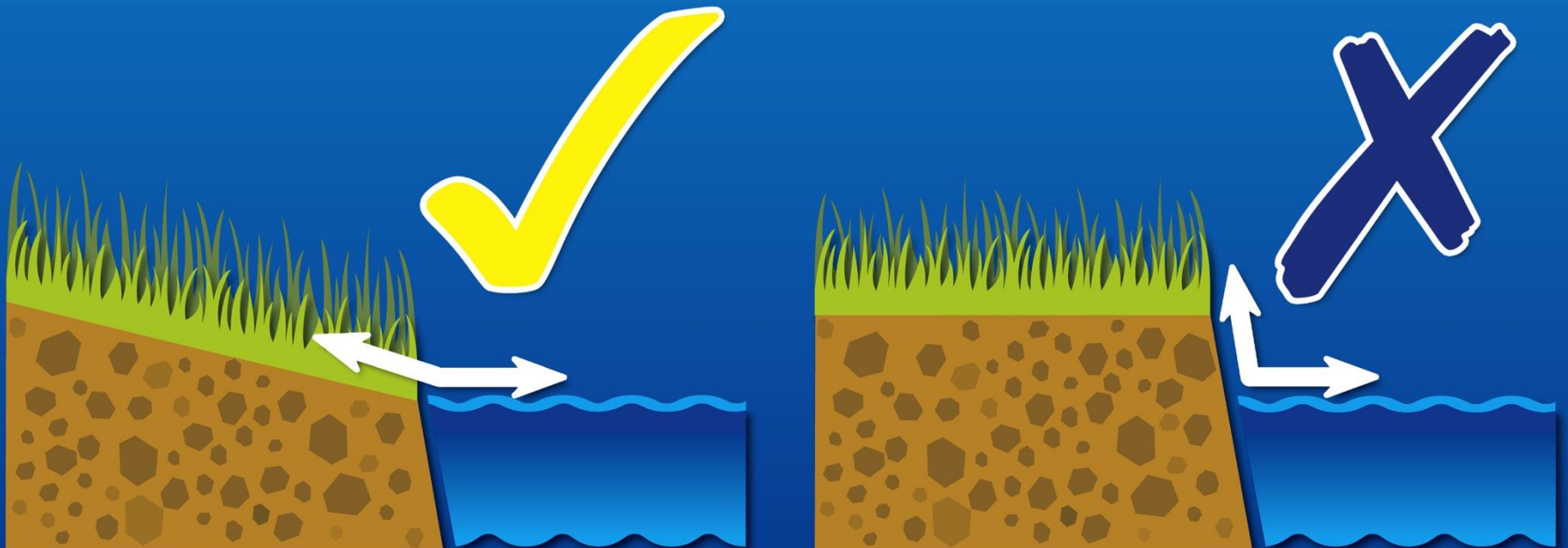
*right distance from
the sea:*

- where high spring tides reach*
- water not too salty*
- usually within 200 m from salt water wedge*

WHERE inanga spawn

gently sloping bank:

– easily accessible for egg laying



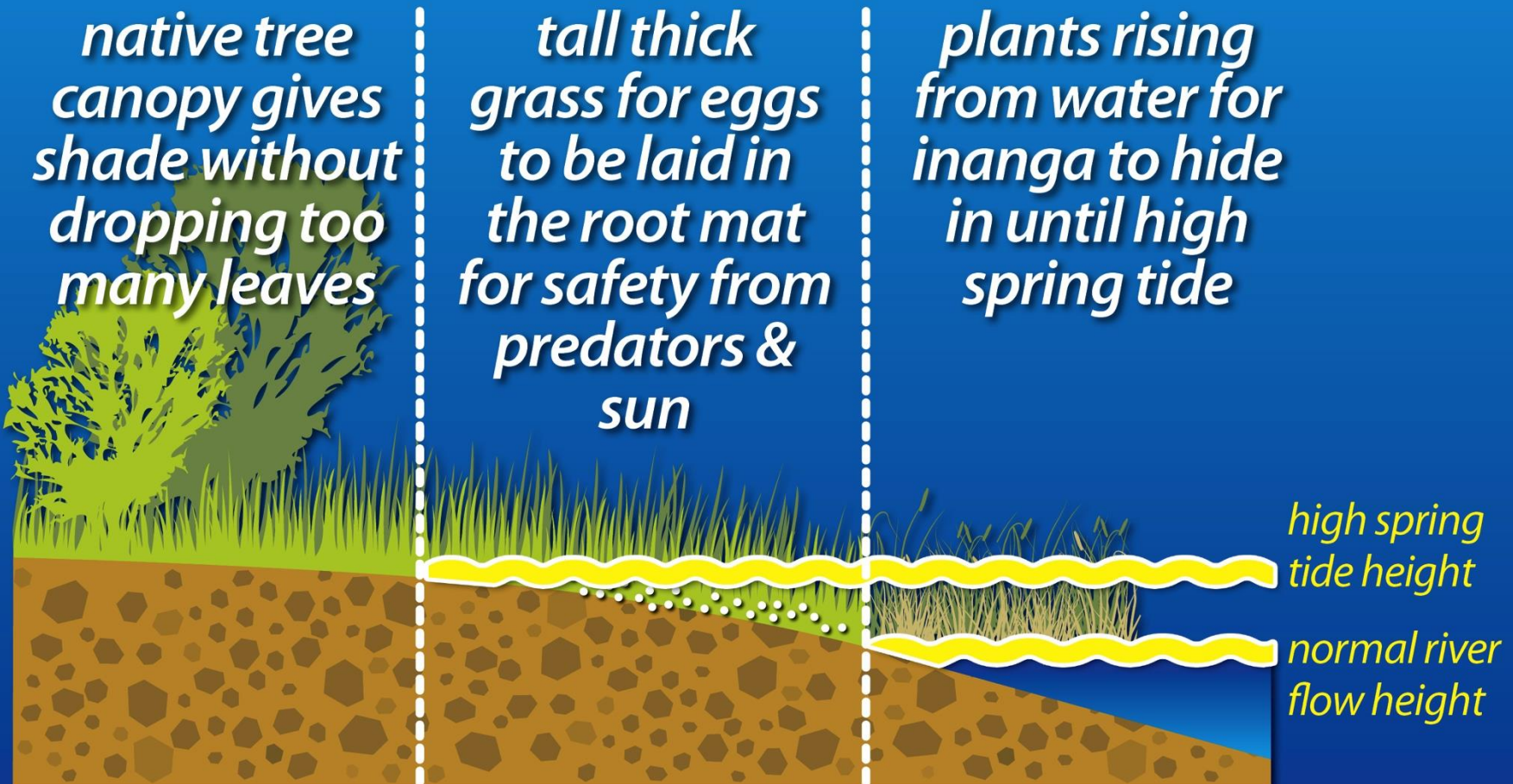
WHERE inanga spawn

good bank vegetation:

***native tree
canopy gives
shade without
dropping too
many leaves***

***tall thick
grass for eggs
to be laid in
the root mat
for safety from
predators &
sun***

***plants rising
from water for
inanga to hide
in until high
spring tide***



inanga
numbers are
DECLINING!



WHY do we care!

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if you want us around
in the future you'd
better look after us
NOW!



WHY do we care!

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less inanga eggs = less whitebait = less fritters



photo © EOS Ecology

WHY do we care!

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high biodiversity = healthy ecosystem
...everyone has lots to EAT!



yummy
little
fishies!!!



inanga

if it fits
in my
mouth I'm
eating it!



this
doesn't
seem
fair!?

WHY they are declining

more introduced PREDATORS

***slugs
eat eggs***



photo © EOS Ecology

***mice
eat eggs***



***fish
eat whitebait
& inanga***



photo © EOS Ecology

WHY they are declining

damage to spawning HABITAT...including:

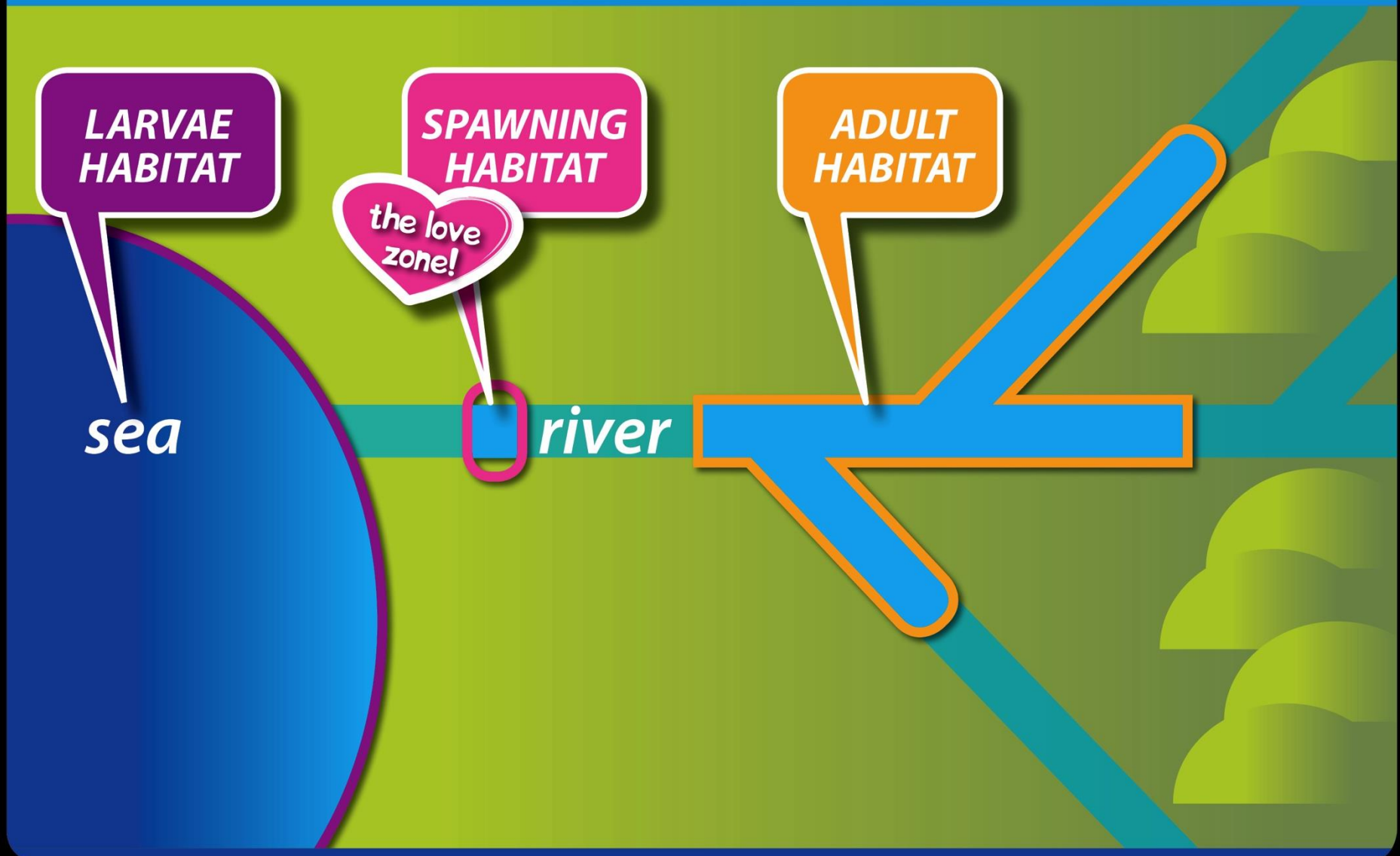
- fewer ‘good’ banks***
- less overhanging plants = less safe places***

changes to whitebait & adult HABITAT...including:

- less ‘good’ habitat***
- harder to move upriver – barriers***

damage to habitats

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spawning habitat changes

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stock damage to banks



photo © EOS Ecology

spawning habitat changes

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*man-made changes to
natural banks*



photo © EOS Ecology

spawning habitat changes

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*mowing grass on banks
during spawning season*



photo © EOS Ecology

spawning habitat changes

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excessive sediment on banks



photo © EOS Ecology

spawning habitat changes

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*barriers to inanga entering
spawning areas*



Photo: EOS Ecology

inanga habitat changes

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barriers to swimming upriver



photo © EOS Ecology

HOW we can help the inanga!



HOW we can help inanga

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SHORT-TERM:
install temporary spawning habitat

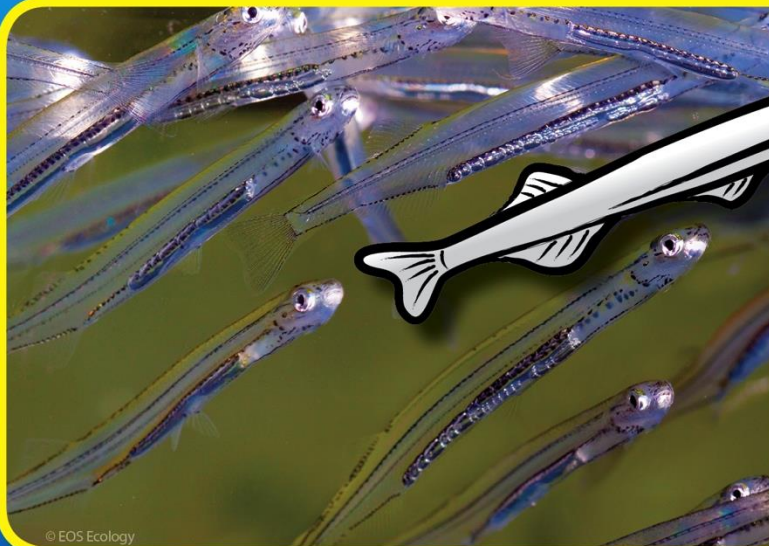


HOW we can help inanga

LONG-TERM:

- fence out stock***
- implement riparian planting plan***
- encourage authorities to review maintenance strategies for banks***
- remove tide gates***
- fix barriers so inanga can get upriver***

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