



# TASMANIA REPORT CARD

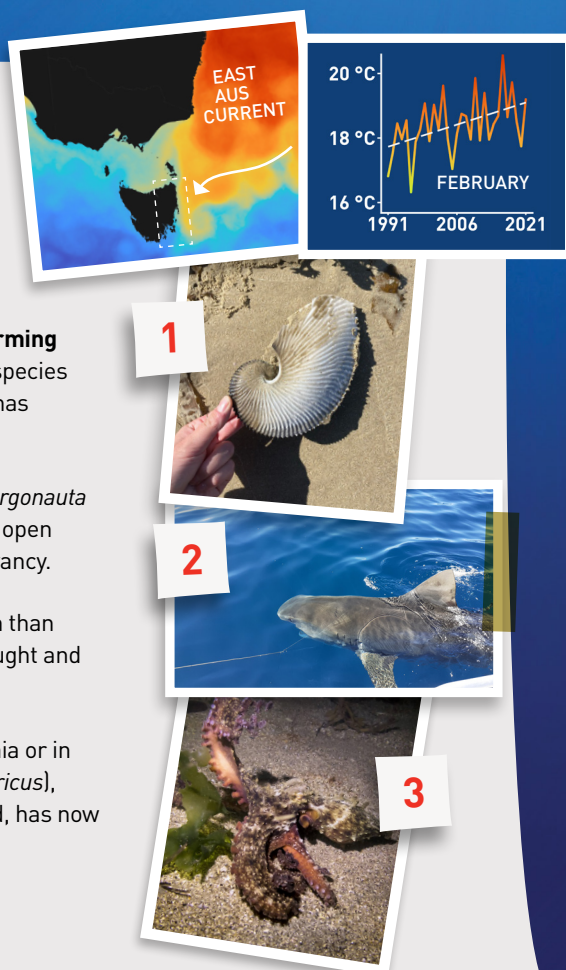
Over the past decade (2013–2022), Redmap (Range Extension Database & Mapping Project) has recorded out-of-range marine species with the help of observant citizen scientists across the state.

## Marine species are moving further south

The East Australian Current, which transports warm, tropical water south along the east coast of Australia, has strengthened over the past several decades. As a result, south-eastern Australia is **one of the fastest warming regions** of the world's oceans. In response to warming waters, some marine species are extending their ranges south. In recent years, the Tasmanian community has **spotted many species south of their usual ranges**, for example:

- 1 Since 2014, beachcombers have found a number of Greater Argonaut (*Argonauta argo*) shells across Tasmania's east and south coasts. This warm-water open ocean octopus relative uses its shell to carry its eggs and maintain buoyancy.
- 2 Fishers have been surprised by catches of several species further south than expected, such as Tiger Sharks (*Galeocerdo cuvier*), which have been caught and released offshore as far south as St. Helens.
- 3 Divers and snorkelers have spotted a number of species new to Tasmania or in new areas further south. For example, the Gloomy Octopus (*Octopus tetricus*), which was reported from the Bass Strait in our original 2013 report card, has now been spotted as far south as Falmouth on Tassie's east coast.

Image credits: [1] Z. Mueller; [2] S. Boag; [3] D. Lee



## CITIZEN SCIENCE HELPS DETECT SPECIES RANGE SHIFTS

Thank you to Tasmania's citizen scientists (beachcombers, boaters, divers, and fishers), who since 2009 have been logging 'out-of-range' species sightings like those above with Redmap. These observations can provide an early indication of how species distributions are changing, improving our ability to predict and prepare for the challenges and opportunities range extending species may deliver. By contributing to citizen science programs like Redmap, anyone with a camera can become an 'ecological detective', helping to uncover which species are on the move and how their local region may be changing in response to ocean warming.

# HOW DO WE DETERMINE IF SPECIES ARE SPOTTED OUT-OF-RANGE?

Sightings logged by citizen scientists are reviewed by species experts for verification. Then, the location of sightings are compared to each species' distribution limits (established from scientific sources as of 2012) to identify which species were spotted beyond their known range boundaries over the past decade. Here is a summary of this information across Tasmania.

**89** CITIZEN SCIENTISTS  
logged unusual or out-  
of-range species sightings

**3** CITIZEN SCIENCE PROGRAMS providing  
out-of-range species observations  
*(see final page for more info)*

redmap  
SPOT. LOG. MAP.

iNaturalist  
Australasian  
Fishes Project

RLS  
REEF LIFE  
SURVEY

**217** Out-of-range or  
unusual SPECIES  
REPORTS

**41** MARINE SPECIES  
tracked for out-of-  
range sightings

**54** SCIENTISTS  
involved in  
verifying species  
identifications

**8**  
out-of-range  
species reported  
in Storm Bay  
and south

SOUTHPORT

HOBART

MARIA ISLAND

BICHENO

ST HELENS

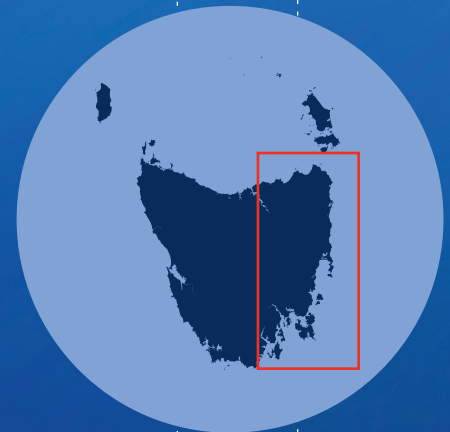
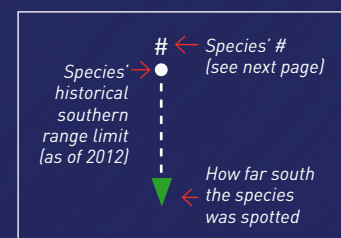
**5**  
out-of-range  
species  
reported in  
the north-east  
4 NEW to Tasmania

**2**  
out-of-range  
species reported  
south of Bicheno

**5**  
out-of-range  
species reported  
south of Maria  
Island

## HOW IS THIS INFORMATION USED?

Out-of-range observations provide important evidence of the possibility that a species' range is extending. Based on factors like whether a species was recorded in more than one year or season, the data help us assess the strength of evidence for each species using a peer-reviewed (or scientifically supported) analysis.





# WHAT SPECIES ARE ON THE MOVE IN TASMANIA?

How confident are we that a species' range is shifting?

HIGH   
MEDIUM   
LOW 

Confidence that a species' range is shifting was assessed as 'High', 'Medium' or 'Low' by combining the strength of evidence provided by citizen scientists' observations with our confidence in each species' known southern range limit.

Number of sightings by:

  
SNORKELERS/  
DIVERS

  
FISHERS

  
BEACH-  
COMBERS

  
SPEAR-  
FISHERS

## North-East Tasmania

1



**Eastern Shovelnose Stingaree**  
(*Trygonoptera imitata*)

 2 

2



**Rock Cule**  
(*Aplodactylus lophodon*)

 2 

3



**Tiger Shark**  
(*Galeocerdo cuvier*)

 2 

4



**Frigate Mackerel**  
(*Auxis thazard*)

 1 

5



**Gloomy Octopus**  
(*Octopus tetricus*)

 1  1 

## South of Bicheno

6



**Sergeant Baker**  
(*Latropiscis purpurissatus*)

 4 

7



**Grey Morwong\***  
(*Nemadactylus douglasii*)

 4  3  2 

## South of Maria Island

8



**Southern Fiddler Ray**  
(*Trygonorrhina dumerilii*)

 2  3  2 

9



**Old Wife\***  
(*Enoplosus armatus*)

 13 

10




**Threadfin Leatherjacket**  
(*Arotrolepis filicauda*)

 1  7 

11



**Onespot Puller**  
(*Chromis hypsilepis*)

 8 

12



**Mahi Mahi**  
(*Coryphaena hippurus*)

 3 

## Storm Bay and south

13



**Eastern King Prawn**  
(*Melicertus plebejus*)

 3  1 

14



**Rock Blackfish\***  
(*Girella elevata*)

 4  5  1 

15



**Luderick**  
(*Girella tricuspidata*)

 4  3  1 

16



**Hairtail Blenny**  
(*Xiphasia setifer*)

 1 

17



**Greater Argonaut**  
(*Argonauta argo*)

 18 

18



**Yellowtail Kingfish**  
(*Seriola lalandi*)

 5  25  2 

19



**Dusky Morwong**  
(*Dactylophora nigricans*)

 4  14  1 

20



**Eastern Rock Lobster**  
(*Sagmariasus verreauxi*)

 7  11  1 

\*shift of adult life stages into areas where only juveniles were reported previously

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# What is Redmap?

Redmap (Range Extension Database and Mapping Project) invites members of the community to spot marine species that are outside of their usual range around Australia and log photos on our website or smartphone app.

## GET INVOLVED

### — WE'RE RELYING ON YOU!

Even though we have 'High' confidence that some species have been extending their range south around the coast of Tasmania, it is your observations as citizen scientists that are helping to assess how far beyond their known ranges these species are found. Your continued efforts will help to determine if these 'out-of-range' observations represent long-term patterns, and whether 'Medium' or 'Low' confidence species are more likely to undergo a range shift in the future. For more info and how to get involved - visit [redmap.org.au](http://redmap.org.au)

## HAVE YOU SPOTTED AND PHOTOGRAPHED THESE SPECIES?



### ON THE EAST COAST?



**Eastern Wirrah**  
(*Acanthistius ocellatus*)



**Eastern Blue Groper**  
(*Achoerodus viridis*)

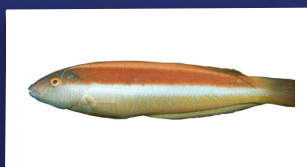


**Moonlighter**  
(*Tilodon sexfasciatus*)

### IN STORM BAY OR SOUTH?



**Rainbow Cale**  
(*Heteroscarus acroptilus*)



**Southern Maori Wrasse**  
(*Ophthalmolepis lineolatus*)



**Halfbanded Seaperch**  
(*Hypoplectrodes maccullochi*)

**Image credits:** top row: Barry Hutchins WA Museum CC BY-NC-SA; Andrew Green CC BY; Julian K. Finn, Museum Victoria CC BY; bottom row: Erik Schlägl; Erik Schlägl; Ian Shaw CC BY; background (above): John Turnbull

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## More ways to be a citizen scientist



**iNaturalist** is an online social network where people can share, identify, and learn about species sightings (not just out-of-range or marine species), and help generate biodiversity data for scientists along the way. [www.inaturalist.org](http://www.inaturalist.org)

**Reef Life Survey** is a citizen science initiative in which trained volunteer SCUBA divers conduct standardised underwater surveys of biodiversity on rocky and coral reefs around Australia (and the world). [www.reeflifesurvey.com](http://www.reeflifesurvey.com)

**WWW.REDMAP.ORG.AU**



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JAMES COOK  
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AUSTRALIA

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