

# FishMap

## Digital tools for taxonomy: maps, images, x-rays and the ALA

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The screenshot shows the FishMap web application interface. At the top, it features the 'ATLAS of LIVING AUSTRALIA' logo with the tagline 'sharing biodiversity knowledge', a 'Home | Log in' link, and a search bar labeled 'Search the Atlas'. Below this is the 'fishmap' logo and the text 'find Australian marine fishes', accompanied by a close-up image of a fish's head. The main search area includes a 'Search' section with instructions: 'Select depth, fish group and location and press the 'Search' button below or use the [simple search](#)>'. The search filters are: 'Depth' (set to 'custom depth range' with a sub-range of 0 to 200m), 'Fish group' (set to 'All fishes'), 'Primary ecosystem' (set to 'any'), 'Only these families' (empty), 'Locality' (set to 'any'), 'Distance from locality' (set to 50km), and 'OR Marine bioregion' (set to 'Southwest Shelf Province'). There are 'Search' and 'Clear' buttons. Below the search filters, the 'Search results' section shows 'Search found 776 species in 192 families.' and links for 'family list', 'species list', and 'species data'. A note specifies 'For the query: Southwest Shelf Province, maxDepth=200' with a 'show full query' link. On the right, a map of Australia is displayed with a red outline highlighting the Southwest Shelf Province. The map includes labels for 'Timor Sea', 'Coral Sea', 'Western Australia', 'Northern Territory', 'Queensland', 'South Australia', 'New South Wales', 'Victoria', 'Tasmania', and 'Australian Capital Territory'. A scale bar shows 1000 km and 500 mi. At the bottom of the map, there are navigation tools: 'Move & zoom', 'Draw circle', 'Draw rect', 'Draw polygon', 'Clear', and 'Reset'. The map data is attributed to '©2013 Google, MapIT, Tele Atlas, ZENRIN - Terms of Use'.

# Need

- Australian marine biota is highly diverse
  - 3rd largest marine jurisdiction of any nation, double the size of land mass
  - Fish fauna among richest on the planet, ~30% are endemic
  - >5000 recognised species of fishes in Australian waters
  - >4500 from the marine waters of the continental shelf and slope alone
- No national identification guide, regional guides largely out of date
  - Promotes inconsistency & errors - names & identifications
  - Under-reporting of diversity
  - Reduces value & longevity of data collected
- Longstanding recognition of need for a national atlas of marine fishes
  - But this is still a long way off...



# The challenge

To create & deliver tools to assist scientists and public

- Accurate, consistent interpretation and recording of our biota – NOW
- Alternatives to keys & detailed guides for all Australian fishes

A partial solution

- A spatial search tool could assist using current data = FishMap

The screenshot displays the ATLASofLIVING AUSTRALIA website interface. At the top, there is a search bar with the text "Search the Atlas" and a magnifying glass icon. Below the search bar, the "fishmap species list" logo is visible, along with a representative image of a fish. The main content area shows search results for "Australia, SCOMBRIDAE". The results are organized into a table with three columns: "Scientific name", "Representative image", and "Distribution". Each row includes a checkbox, the scientific name, common name, family, and CAAB code. The distribution column shows a map of Australia with the species' range highlighted in blue. The results listed are:

Scientific name	Common name	Family	CAAB code	Representative image	Distribution
<input type="checkbox"/> <i>Scomberomorus commerson</i>	Spanish Mackerel	Family: SCOMBRIDAE	CAAB: 37 441007		
<input type="checkbox"/> <i>Scomberomorus munroi</i>	Spotted Mackerel	Family: SCOMBRIDAE	CAAB: 37 441015		
<input type="checkbox"/> <i>Scomberomorus queenslandicus</i>	School Mackerel	Family: SCOMBRIDAE	CAAB: 37 441014		
<input type="checkbox"/> <i>Scomberomorus semifasciatus</i>	Grey Mackerel	Family: SCOMBRIDAE	CAAB: 37 441018		

# Components

Data updated / compiled for ~4500 shelf & slope species

- Images:>90% of species illustrated
- Maps
  - Geographic range
  - Depth range
- Current scientific names
- Standardised common names



[FishMap](#)

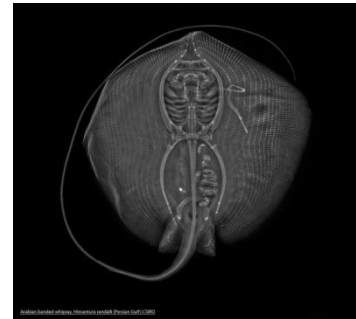
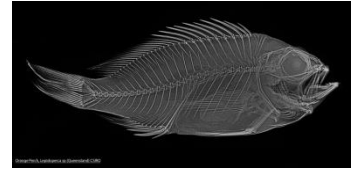
# A partial solution

- Create illustrated “candidate lists”
  - Flag alternative species within a study area
  - Restrict to location, depth
  - Restrict to a family or genus
- Compiling illustrated faunal lists using spatial limits
  - Create faunal list before undertaking field work
  - Current nomenclature & taxonomy improves data consistency
  - Reduces “out of range ID’s”
- Further refine searches (depth, habitat)
  - Refine the list from 4500 species to a more manageable number



# Next steps

- Updates ready to deploy
  - Maximum length for commercial & recreational species
  - Easier printing & download
  - TEPS, MPA's, state boundaries
  - Restrict to recreational and commercial species
  - FAQ page
- Broader identification utility
  - Combined characters to improve species searches – including family characters = lucid style selection of traits
- Species dossiers
  - Broader range of species-level data, including x-rays



These improvements to refine search results, assisting species-level identifications

# fish.ala.org.au

## Core research team

**CSIRO: Peter Last, William White, Tony Rees, John Pogonoski, Carlie Devine, Louise Conboy, Alastair Graham**

**ALA: Peter Doherty, Mark Woolston, Dave Martin, Miles Nicholls, Nick dos Remedios and the rest of the ALA team**

**A special thanks also to the Australian ichthyological community**



# fishmap find Australian marine fishes



## Search

Select depth, fish group and location and press the 'Search' button below or use the [simple search](#).

Depth

OR Custom depth range (m) Min:  Max:

Fish group

Primary ecosystem

Only these families



Only include Endemic species

Locality

Distance from locality

OR

OR use the tools below the map to draw a region.

### Search results

Search found **1071** species in **157** families.

View results by:

[family list](#) | [species list](#) | [species data](#)

For the query: Exmouth (50.0km), maxDepth=40

[show full query](#)



Circle

Lat:

Lon:

Radius:





# fishmap family list



Search : Results by family

Results for Exmouth (50.0km), coastal/shallow water (0-40m)

Click images to view full size.

Sort by: [dropdown] Sort order: [dropdown] Results per page: [dropdown]

Family name Common name CAAB code <a href="#">more info</a>	Representative image	Genera
<input type="checkbox"/> <a href="#">HEMIGALEIDAE</a> Weasel Sharks <a href="#">37.018</a> <a href="#">info</a>		<a href="#">Hemigaleus</a> <a href="#">Hemipristis</a>
<input type="checkbox"/> <a href="#">HEMIRAMPHIDAE</a> Garfishes <a href="#">37.234</a> <a href="#">info</a>		<a href="#">Arrhamphus</a> <a href="#">Ejectoramphus</a> <a href="#">Hemiramphus</a> <a href="#">Hyporamphus</a>
<input type="checkbox"/> <a href="#">HEMISCYLLIIDAE</a> Bamboo Sharks <a href="#">37.013</a> <a href="#">info</a>		<a href="#">Chiloscyllium</a> <a href="#">Hemiscyllium</a>
<input type="checkbox"/> <a href="#">HOLOCENTRIDAE</a> Soldierfishes <a href="#">37.261</a> <a href="#">info</a>		<a href="#">Mirripristis</a> <a href="#">Neoniphon</a> <a href="#">Ostichthys</a> <a href="#">Sargocentron</a>



# fishmap species list



Search: Results by species

Results for Exmouth (50.0km), coastal/shallow water (0-40m)

Click images to view full size.

Sort by: Family/genus/sex

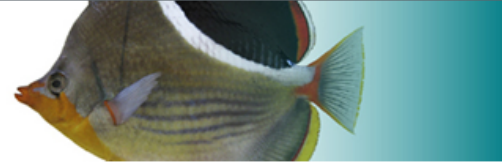
Sort order: normal

Results per page: 10

Scientific name	Representative image	Distribution
Common name		About maps
Family		
CSIIR code <a href="#">page info</a>		
<p><b>Melichthys chrysops</b> Yellowfin Soldierfish</p> <p>Family: HOLOCENTRIDAE CSIIR <a href="#">2T.22.1002</a></p>		
<p><b>Melichthys boops</b> Epaulette Soldierfish</p> <p>Family: HOLOCENTRIDAE CSIIR <a href="#">2T.22.1011</a></p>		
<p><b>Melichthys crinitus</b> Crimson Soldierfish</p> <p>Family: HOLOCENTRIDAE CSIIR <a href="#">2T.22.1001</a></p>		



# fishmap species data



Search : Results as data table

Results for Exmouth (50.0km), coastal/shallow water (0-40m)

Sort by:  Sort order:

CAAB Code	Family	Scientific name	Common name	Fish group	Min depth	Max depth	Primary ecosystem
37 437008	ACANTHURIDAE	<a href="#">Acanthurus dussumieri</a>	Pencil Surgeonfish		1	131	coastal, demersal
37 437002	ACANTHURIDAE	<a href="#">Acanthurus grammoptilus</a>	Inshore Surgeonfish		0	75	coastal, demersal
37 437010	ACANTHURIDAE	<a href="#">Acanthurus lineatus</a>	Bluelined Surgeonfish		0	12	coastal
37 437011	ACANTHURIDAE	<a href="#">Acanthurus mata</a>	Pale Surgeonfish		0	30	coastal
37 437012	ACANTHURIDAE	<a href="#">Acanthurus nigricans</a>	Velvet Surgeonfish		0	67	coastal, demersal
37 437014	ACANTHURIDAE	<a href="#">Acanthurus nigrofuscus</a>	Dusky Surgeonfish		1	20	coastal
37 437016	ACANTHURIDAE	<a href="#">Acanthurus olivaceus</a>	Orangeblotch Surgeonfish		0	62	coastal, demersal
37 437019	ACANTHURIDAE	<a href="#">Acanthurus triostegus</a>	Convict Surgeonfish		0	15	estuarine, coastal
37 437023	ACANTHURIDAE	<a href="#">Ctenochaetus cyanocheilus</a>	Yelloweye Bristletooth		1	30	coastal
37 437026	ACANTHURIDAE	<a href="#">Naso brevirostris</a>	Spotted Unicornfish		2	30	coastal
37 437027	ACANTHURIDAE	<a href="#">Naso figanii</a>	Horseface Unicornfish		3	30	coastal
37 437003	ACANTHURIDAE	<a href="#">Naso macleodi</a>	Squarenose Unicornfish		5	53	coastal, demersal
37 437047	ACANTHURIDAE	<a href="#">Naso tonganus</a>	Humpnose Unicornfish		7	25	coastal
37 437031	ACANTHURIDAE	<a href="#">Naso unicornis</a>	Blue-line Unicornfish		1	30	coastal



# fishmap find Australian marine fishes



## Search

Select depth, fish group and location and press the 'Search' button below or use the [advanced search](#).

**Depth** coastal/shallow water (0-40m) ▾

**Fish group** Emperors ▾

**Locality** and Australian salmon

Distance from location  50km

**Search**

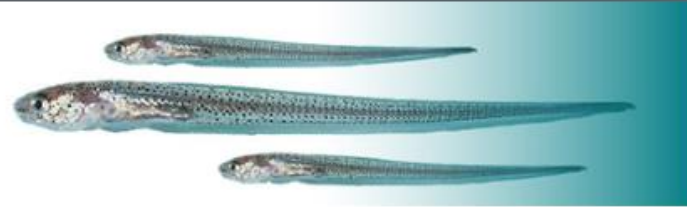
- All fishes
- Australian salmon
- Billfishes
- Boarfishes
- Breams
- Catfishes
- Chimaeras
- Cods
- Dories
- Eels
- Emperors**
- Flatfishes
- Flatheads
- Garfishes
- Gemfishes
- Gurnards & latches
- Hagfishes
- Hakes
- Herrings & anchovies
- Jewfishes



This tool searches 'compiled distributions' for marine fishes inhabiting Australia's continental shelf and slope waters. These are maps of the areas where a species may be expected to be found (rather than searching only collection or observation records which have false absences, and may contain identifications that are out of date). The maps are developed by a person or persons with expert knowledge of the group. Read more [here](#).



# fishmap family list



Search : Results by family

Results for Exmouth (50.0km), coastal/shallow water (0-40m)

Click images to view full size.

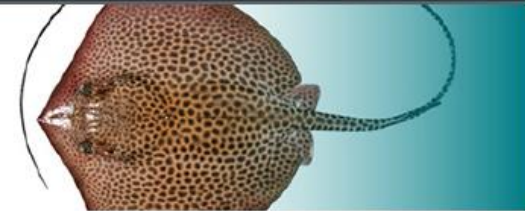
Sort by: Scientific name Sort order: normal Results per page: 10

Family name Common name CAAB code <a href="#">more info</a>	Representative image	Genera
<input type="checkbox"/> <b><u>ACANTHURIDAE</u></b> Bristletooths <a href="#">37 437</a> <a href="#">r</a>		<a href="#">Acanthurus</a> <a href="#">Ctenochaetus</a> <a href="#">Naso</a> <a href="#">Zebrasoma</a>
<input type="checkbox"/> <b><u>ACROPOMATIDAE</u></b> Bass <a href="#">37 311</a> <a href="#">r</a>		<a href="#">Apogonops</a> <a href="#">Doederleinia</a>
<input type="checkbox"/> <b><u>ALBULIDAE</u></b> Bonefishes <a href="#">37 055</a> <a href="#">r</a>		<a href="#">Albula</a>
<input type="checkbox"/> <b><u>ALOPIIDAE</u></b> Thresher Sharks		





# fishmap find Australian marine fishes



## Search

Select depth, fish group and location and press the 'Search' button below or use the [advanced search](#).

Depth

Fish group

Locality

Distance from

- Exmouth
- Port Lincoln
- Tasmania**
- Devonport
- Hobart
- South East Cape
- St Marys
- Strahan
- Victoria**
- Geelong
- Lakes Entrance
- Warrnambool
- Wilson's Promontory
- Western Australia**
- Albany
- Broome
- Cape Leeuwin
- Cape Londonderry
- Carnarvon
- Esperance
- Exmouth



This tool searches 'compiled distributions' for marine fishes inhabiting Australia's continental shelf and slope waters. These are maps of the areas where a species may be expected to be found (rather than searching only collection or observation records which have false absences, and may contain identifications that are out of date). The maps are developed by a person or persons with expert knowledge of the group. Read more [here](#).



# fishmap

find Australian marine fishes



## Search

Select depth, fish group and location and press the 'Search' button below or use the [simple search](#).

**Depth**

OR Custom depth range (m) Min:  Max:

**Fish group**

Primary ecosystem

Only these families

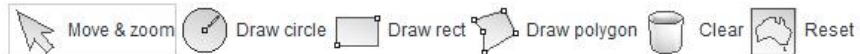
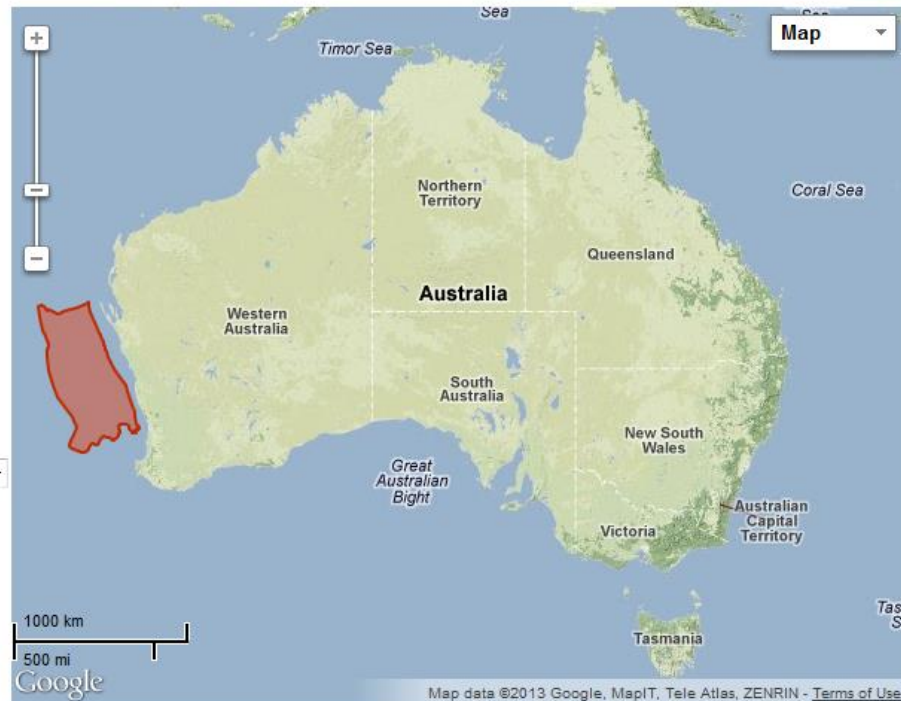
CHAETODONTIDAE x MONACANTHIDAE x

**Locality**

Distance from locality

OR Marine bioregion

OR use the tools below the map to draw a region.





# fishmap species list



Search : Results by species

Results for Central Western Province, maxDepth=300, CHAETODONTIDAE

Click images to view full size.

Sort by: Family/genus/spp

Sort order: normal

Results per page: 10

Scientific name

Common name

Family

CAAB code [more info](#)

Representative image

Distribution

[About maps](#)



[Chaetodon assarius](#)

Western Butterflyfish

Family: CHAETODONTIDAE

CAAB: [37 365012](#)



[Chaetodon auriga](#)

Threadfin  
Butterflyfish

Family: CHAETODONTIDAE

CAAB: [37 365019](#)



[Chaetodon citrinellus](#)

Citron Butterflyfish

Family: CHAETODONTIDAE

CAAB: [37 365036](#)



[Chaetodon lineolatus](#)

Lined Butterflyfish

Family: CHAETODONTIDAE

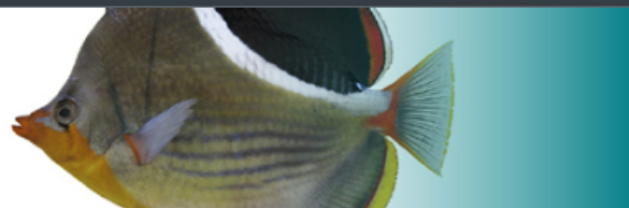
CAAB: [37 365041](#)







# fishmap species data



Search : Results as data table

## Results for Central Western Province, maxDepth=300, CHAETODONTIDAE

Sort by:  Sort order:

CAAB Code	Family	Scientific name	Common name	Fish group	Min depth	Max depth	Primary ecosystem
37 365012	CHAETODONTIDAE	<a href="#">Chaetodon assarius</a>	Western Butterflyfish		0	40	coastal
37 365019	CHAETODONTIDAE	<a href="#">Chaetodon auriga</a>	Threadfin Butterflyfish		1	40	coastal
37 365036	CHAETODONTIDAE	<a href="#">Chaetodon citrinellus</a>	Citron Butterflyfish		1	36	coastal
37 365041	CHAETODONTIDAE	<a href="#">Chaetodon lineolatus</a>	Lined Butterflyfish		2	171	coastal, demersal
37 365042	CHAETODONTIDAE	<a href="#">Chaetodon lunula</a>	Raccoon Butterflyfish		2	158	coastal, demersal
37 365050	CHAETODONTIDAE	<a href="#">Chaetodon plebeius</a>	Bluespot Butterflyfish		0	20	coastal
37 365056	CHAETODONTIDAE	<a href="#">Chaetodon speculum</a>	Ovalspot Butterflyfish		2	30	coastal
37 365058	CHAETODONTIDAE	<a href="#">Chaetodon trifascialis</a>	Chevron Butterflyfish		2	30	coastal
37 365066	CHAETODONTIDAE	<a href="#">Cheilmonops curiosus</a>	Western Talma		5	60	coastal, demersal
37 365004	CHAETODONTIDAE	<a href="#">Coradion chrysozonus</a>	Orangebanded Coralfish		3	60	coastal, demersal
37 365011	CHAETODONTIDAE	<a href="#">Heniochus acuminatus</a>	Longfin Bannerfish		2	75	coastal, demersal
37 365005	CHAETODONTIDAE	<a href="#">Heniochus diphreutes</a>	Schooling Bannerfish		3	210	coastal, demersal
37 365003	CHAETODONTIDAE	<a href="#">Parachaetodon ocellatus</a>	Ocellate Butterflyfish		2	61	coastal, demersal

Total species: 13 [Show all results by family](#) [Show all results by species](#)