

Aquarium Setups

A data analysis project on aquarium fish species available in the trade

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Table of Contents 🐟

- Purpose of Analysis
- Data Details
- Process and Tools
- Dashboard
- Impact
- Biography



Purpose of Analysis

- How can the Hobby be made more easily accessible for beginner aquarists?
- How can we maintain the engagement of experienced aquarists and promote expansion of the hobby?
- Help online fish retailers or pet shops better tailor inventory, recommend species, or design customer-facing tools that match user preferences.
- Promote informed purchasing decisions by helping customers better understand the needs of acquired fish.



Data Details - Collection

Data collection spanned 3 phases:

- Online shop stock review for pricing and available varieties;
- Research into each species for gathering relevant information such as natural range, habitat as well as feeding and housing requirements;
- Obtaining licensed images for each species in order to offer the users a better experience;



Data Details - Cleaning and Validation

- Data was collected into two separate spreadsheets;
- Scientific Name was used as the common key for future joining of these tables;
- Utilized data validation techniques (dropdowns) to ease the process;
- After cleaning the data, two junction tables were created for the “multiple entry” columns (Habitat and Compatibility).



Process and Tools

- Each table was uploaded into bigQuery for processing;
- Tables were connected using JOINS on the Scientific Name common key;
- CASE expressions were used to create the “Budget Category”, “Experience Level”, “Tank Size Category” and “Habitat Type” categories;
- The result of the query was a single table reorganising the data for easier Tableau processing.

Process and Tools

The CASE expression for organising the “Budget Category” utilized the most conditional clauses, combining the prices per fish together with the data on how species naturally group when kept in aquariums.

```
15
16 CASE
17   WHEN fs.Grouping IN ('Loner', 'Pair') AND ws.`Lowest Price RON` < 30 THEN 'Low Budget'
18   WHEN fs.Grouping IN ('Loner', 'Pair') AND ws.`Lowest Price RON` >= 30 THEN 'Medium Budget'
19   WHEN fs.Grouping = 'Small Groups' AND ws.`Lowest Price RON` < 20 THEN 'Low Budget'
20   WHEN fs.Grouping = 'Small Groups' AND ws.`Lowest Price RON` >= 20 AND ws.`Lowest Price RON` < 35 THEN 'Medium Budget'
21   WHEN fs.Grouping = 'Small Groups' AND ws.`Lowest Price RON` >= 35 THEN 'High Budget'
22   WHEN fs.Grouping IN ('Groups', 'Shoaling', 'Schooling') AND ws.`Lowest Price RON` < 10 THEN 'Low Budget'
23   WHEN fs.Grouping IN ('Groups', 'Shoaling', 'Schooling') AND ws.`Lowest Price RON` >= 10 AND ws.`Lowest Price RON` < 15 THEN 'Medium Budget'
24   WHEN fs.Grouping IN ('Groups', 'Shoaling', 'Schooling') AND ws.`Lowest Price RON` >= 15 THEN 'High Budget'
25   ELSE 'High Budget'
26 END AS `Budget Category`,
27
```

Process and Tools

- In Tableau filters were created on the newly defined categories together with a filter on the fish species' natural distribution areas;
- A Web Page Object was added to the dashboard which utilized the URL link each species received to showcase the fish and make it easier for users to decide on their choices;
- Popups were set up to showcase information on water parameters for each species as well as credit the authors of the used photos as per licensing requirements.

Budget Category

- ☐ (All)
- ☐ High Budget
- ☒ Low Budget
- ☐ Medium Budget

Experience Level

- ☐ (All)
- ☐ Advanced
- ☒ Beginner
- ☐ Intermediate

Tank Size Category

- ☐ (All)
- ☐ Large
- ☐ Medium
- ☒ Small

Habitat Type

- ☒ (All)
- ☒ Brackish Environment
- ☒ Fast Flowing River
- ☒ Flooded Areas

Distribution

- ☒ (All)
- ☒ Amazon
- ☒ Argentina
- ☒ Australia

*Note: Some filter combinations may return no results.
Try adjusting one or more filters if the list appears blank.*

Fish Species

Scientific Name	Display Name	
	Guppy (snakeskin green delta)	<input type="checkbox"/>
	Guppy (snow white)	<input type="checkbox"/>
	Guppy (sunset blonde)	<input type="checkbox"/>
	Guppy (sunset cobra)	<input type="checkbox"/>
	Guppy (super green scissor tail)	<input type="checkbox"/>
	Guppy (tiger)	<input type="checkbox"/>
	Guppy (triangle)	<input type="checkbox"/>
	Guppy (tuxedo black)	<input type="checkbox"/>
	Guppy (tuxedo bronze)	<input type="checkbox"/>
	Guppy (tuxedo red dragon)	<input type="checkbox"/>
	Guppy (tuxedo red)	<input type="checkbox"/>
	Guppy (Tuxedo Yellow)	<input type="checkbox"/>
	Guppy (variegated)	<input type="checkbox"/>
	Guppy (white tuxedo)	<input type="checkbox"/>
	Guppy (yellow mosaic)	<input type="checkbox"/>
	Guppy (yellow)	<input type="checkbox"/>
Poecilia wingei	Endler's Livebearer (Gold Yellow)	<input type="checkbox"/>
	Endler's Livebearer (golden mascul)	<input type="checkbox"/>
Pristella maxillaris riddlei	X-ray Tetra (gold)	<input checked="" type="checkbox"/>
	X-ray Tetra (Pristella maxillaris riddlei)	<input checked="" type="checkbox"/>
Rasbora heteromorpha	Harlequin Rasbora (Black)	<input type="checkbox"/>
	Harlequin Rasbora (Rasbora heteromorpha)	<input type="checkbox"/>
Tanichthys albonubes	White Cloud Mountain Minnow (Tanichthys albo..)	<input type="checkbox"/>
	White Cloud Mountain Minnow (Tanichthys Gold)	<input type="checkbox"/>
Trichogaster chuna	Honey Gourami (gold dwarf)	<input type="checkbox"/>
	Honey Gourami (Red)	<input type="checkbox"/>
	Honey Gourami (wild)	<input type="checkbox"/>
Trichogaster lalius	Dwarf Gourami (blood red male)	<input type="checkbox"/>
	Dwarf Gourami (Colisa lalia)	<input type="checkbox"/>
	Dwarf Gourami (mix female)	<input type="checkbox"/>



Scientific Name: **Pristella maxillaris riddlei**

Inhabited area of the aquarium: Middle Water

Water parameters:

Temperature: 22 - 7.500

Hardness: 2 - 20

PH: 6.000 - 7.500

Special note:

Photo by Richard Bartz, Munich Makro Freak / Wikimedia Commons, licensed under CC BY-SA 2.5 (<https://creativecommons.org/licenses/by-sa/2.5>) Source: https://commons.wikimedia.org/wiki/File:Pristella_maxillaris.jpg

Budget Category

- ☐ (All)
- ☐ High Budget
- ☒ Low Budget
- ☒ Medium Budget

Experience Level

- ☐ (All)
- ☐ Advanced
- ☒ Beginner
- ☒ Intermediate

Tank Size Category

- ☒ (All)
- ☒ Large
- ☒ Medium
- ☒ Small

Habitat Type





- ☒ (All)
- ☒ Brackish Environment
- ☒ Fast Flowing River
- ☒ Flooded Areas
- ☒ Freshwater

Distribution

- ☐ Africa
- ☐ Middle East
- ☐ Northeastern South America
- ☒ Orinoco
- ☐ Papua New Guinea

*Note: Some filter combinations may return no results.
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Fish Species

Scientific Name	Display Name	
Apistogramma hongloi	Redline Apistogramma (Apistogramma hongloi)	
	Redline Apistogramma (i red-gold)	
Apistogramma macmasteri	Macmaster's Apistogramma (Apistogramma ma..)	
	Macmaster's Apistogramma (red mask)	
Axelrodia riesei	Ruby Tetra (Ruby Tetra)	
Corydoras habrosus	Salt and Pepper Cory (Corydoras habrosus)	
Hypostomus plecostomus	Common Plecostomus (gold)	
	Common Plecostomus (Hypostomus plecostomus)	
Megalampodus sweglesi	Red Phantom Tetra (Megalampodus sweglesi)	



Hovering over the square on the right of a species will show a popup containing basic data on the fish's Aquarium requirements.

Selecting a fish species will show a photo of them on the right section of the dashboard. If a clipart fish appears instead of a photo, then it means that there are no licensed photos available for this species.

Budget Category

☐ (All)
☐ High Budget
☒ Low Budget
☐ Medium Budget

Experience Level

☐ (All)
☐ Advanced
☒ Beginner
☐ Intermediate

Tank Size Category

☐ (All)
☐ Large
☐ Medium
☒ Small

Habitat Type

☐ (All)
☐ Brackish Environment
☒ Fast Flowing River
☒ Flooded Areas

Distribution

☒ (All)
☒ Amazon
☒ Argentina
☒ Australia

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Fish Species

Scientific Name	Display Name	
Acanthopthalmus kuhli	Kuhli Loach (Acanthopthalmus kuhli)	<input type="checkbox"/>
Ancistrus	Common Bristlenose Catfish (Ancistrus albino)	<input type="checkbox"/>
	Common Bristlenose Catfish (Ancistrus)	<input type="checkbox"/>
	Common Bristlenose Catfish (gold)	<input type="checkbox"/>
	Common Bristlenose Catfish (red + black)	<input type="checkbox"/>
Anomalochromis thomasi	African Butterfly Cichlid (Pelmatochromis thoma..	<input type="checkbox"/>
Aphyocharax anisitsi	Bloodfin Tetra (Aphyocharax anisitsi/rubripinni)	<input type="checkbox"/>
Aphyosemion australe	Golden Lyretail (Aphyosemion australe)	<input checked="" type="checkbox"/>
	Golden Lyretail (cap esterias)	<input checked="" type="checkbox"/>
	Golden Lyretail (gold)	<input checked="" type="checkbox"/>
Aphyosemion gabunense	Gabon Lyretail (Aphyosemion gabunense)	<input type="checkbox"/>
Aplocheilichthys blockii	Green Panchax (Aplocheilichthys blockii)	<input type="checkbox"/>
Axelrodia riesei	Ruby Tetra (Ruby Tetra)	<input type="checkbox"/>
Barbodes semifasciolatus	Golden Barb (Barbus Capoeta schuberti)	<input type="checkbox"/>
	Golden Barb (gold)	<input type="checkbox"/>
Barbus conchoni	Rosy Barb (Barbus conchoni)	<input type="checkbox"/>
	Rosy Barb (gold)	<input type="checkbox"/>
	Rosy Barb (neon orange supercolor)	<input type="checkbox"/>
	Rosy Barb (orange)	<input type="checkbox"/>
Barbus pentazona	Five-banded Barb (Barbus pentazona)	<input type="checkbox"/>
Barbus tetrazona	Tiger Barb (albino)	<input type="checkbox"/>
	Tiger Barb (Barbus Capoeta tetrazona h.k.)	<input type="checkbox"/>
	Tiger Barb (Barbus Tetrazona)	<input type="checkbox"/>
	Tiger Barb (gold green)	<input type="checkbox"/>
	Tiger Barb (green)	<input type="checkbox"/>
Barbus titteya	Cherry Barb (Barbus titteya)	<input type="checkbox"/>
Betta imbellis	Crescent Betta (Betta Imbellis)	<input type="checkbox"/>
Betta splendens	Siamese Fighting Fish (alb M)	<input type="checkbox"/>
	Siamese Fighting Fish (albino M)	<input type="checkbox"/>
	Siamese Fighting Fish (cambodian M)	<input type="checkbox"/>



Hovering over the square on the right of a species will show a popup containing basic data on the fish's Aquarium requirements.

Selecting a fish species will show a photo of them on the right section of the dashboard. If a clipart fish appears instead of a photo, then it means that there are no licensed photos available for this species.

Impact

What this dashboard enables:

- Beginner aquarists can discover easy, affordable options quickly
- Retailers or forums can integrate filters for smarter recommendations
- The model can be expanded with more species, plant species, invertebrate species or expand on data such as compatibility or costumer reviews



Bibliography

Fish webstore: www.nevertebrate.ro

Fish Species Data:

- SeriouslyFish.com
- <https://www.fishi-pedia.com>
- <https://aquariumbreeder.com>
- <https://aquadiction.world>
- <https://www.fishbase.se>
- <https://dwarfcichlid.com>
- <https://www.planetcatfish.com>
- <https://www.tropicalfishsite.com>
- <https://en.aqua-fish.net>

Images:

- https://commons.wikimedia.org/wiki/Main_Page
- <https://www.inaturalist.org/>
- <https://www.fishbase.se/search.php>

