**A Statistical Investigation of Rough-Toothed Dolphin Whistle Types** – Statistic Section Poster Plan:

**Key Message:** That understanding the variability in dolphin vocalizations, particularly the whistle repertoire of the rough-toothed dolphin (Steno bredanensis), is crucial for comparing communication patterns across different species, populations, and individuals.

For understanding the variability in dolphin vocalization, the best modelling to use that can show this is Multinomial GLM, but what other options where selected, and why was this eventually chosen?

**Key Findings:**

* The study uses regression analysis and neural-network classification techniques to explore and describe different whistle types
* Data visualization was used to further interpret the variability of dolphin whistles and potential environmental drivers influencing this variation.
* Looking at the differences between the two different models used, and checking why one may be better than the other (Multinomial GLM is better than Random Forest for this purpose)

**Major aspects of the poster:**

* Visually: Using clear and engaging visual representations of the data, such as graphs showing geographical differences in the whistle repertoire, and the diversity of whistles across populations, having 2 different graphs for each explanation, one of Multinomial GLM and one of Random Forest, providing explanations for what each one shows
* Verbally: Demonstrate why one was considered better than the other in the context of the question being solved (finding the differences in the geographical locations of the whistles).

**Audience:** Researchers in marine biology, conservationists and marine scientists and anyone else that may have an interest in marine life and marine behaviour + Statisticians

**Sections to Include:**

1. **Introduction** – Introduce the importance of studying dolphin vocalizations and why the rough-toothed dolphin’s whistle repertoire is significant. Explain the need for a model and what the model provides to find the differences between the geographical locations of whistles. (This section may be similar/same to biologist team)
2. **Methods** – Outline the modelling techniques used (ROCCA, ARTwarp, biodiversity measures, and visualization) in an accessible way. Introduce the two models used, explaining what they are used for and why they may be used to help with the goal of the VIP.
3. **Results** – Present the main findings, such as the variation in the whistle repertoire across populations and the methods used to classify and quantify these differences (Explain the differences in using Multinomial GLM and Random Forest).
4. **Discussion** – Interpret the pros and cons of the models used and the reasonings onto why one model was eventually decided as the main model to use (why was Multinomial GLM considered better) in the context of environmental drivers and the broader implications for dolphin communication.
5. **Conclusion(s)** – Summarize the findings and propose avenues for future research, such as applying similar techniques to other dolphin species. Refer to the other closely related group poster created by the biologist team. (This section may be similar to biologist team)