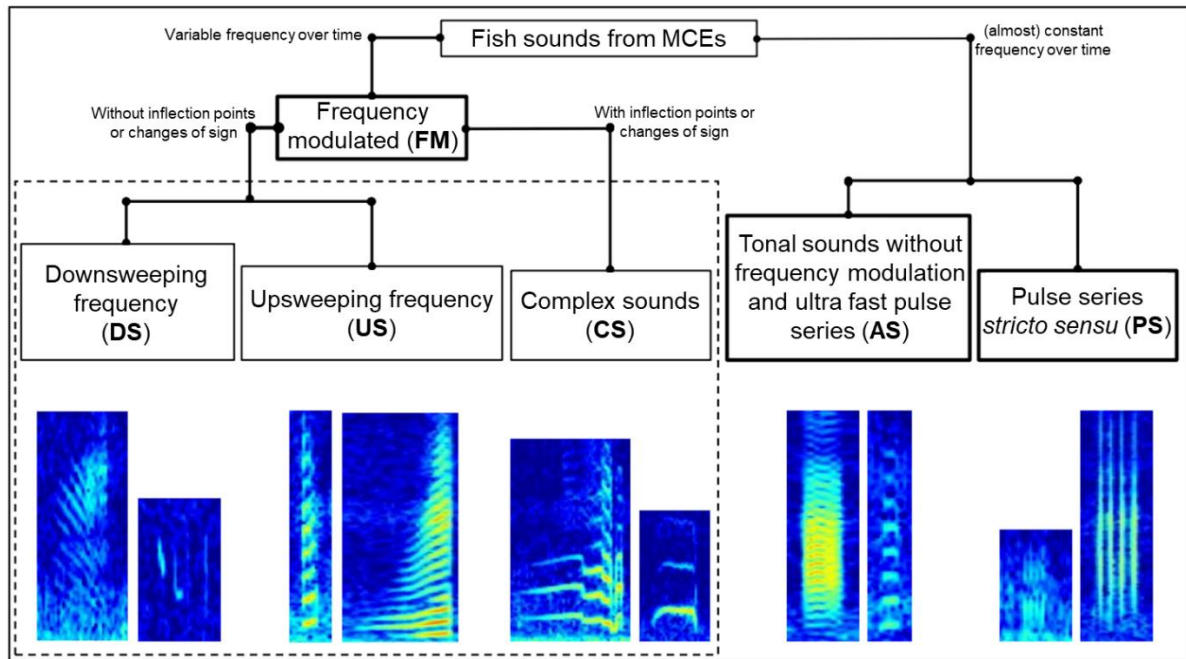# Appendix


Key A.1 Sound identification key for biological sounds below 2 kHz from mesophotic reefs in French Polynesia. Available at https://zenodo.org/records/10592329.


Acoustic files A.1 Marine sounds below 2 kHz from French Polynesia. Available at https://zenodo.org/records/12570714.

Figure A.1 Classification of fish sounds from Polynesian MCEs with spectrogram captions (FFT = 256) to illustrate various sound types. AS and PS can be grouped as 'Pulse series _lato sensu_'. Bold boxes represent acoustic categories, while non-bold boxes represent acoustic sub-categories of sound types. Adapted from (Raick _et al._ 2023c)**. AS was used for arched sounds, grouping tonal sounds without FM and ultra-fast pulse series.**
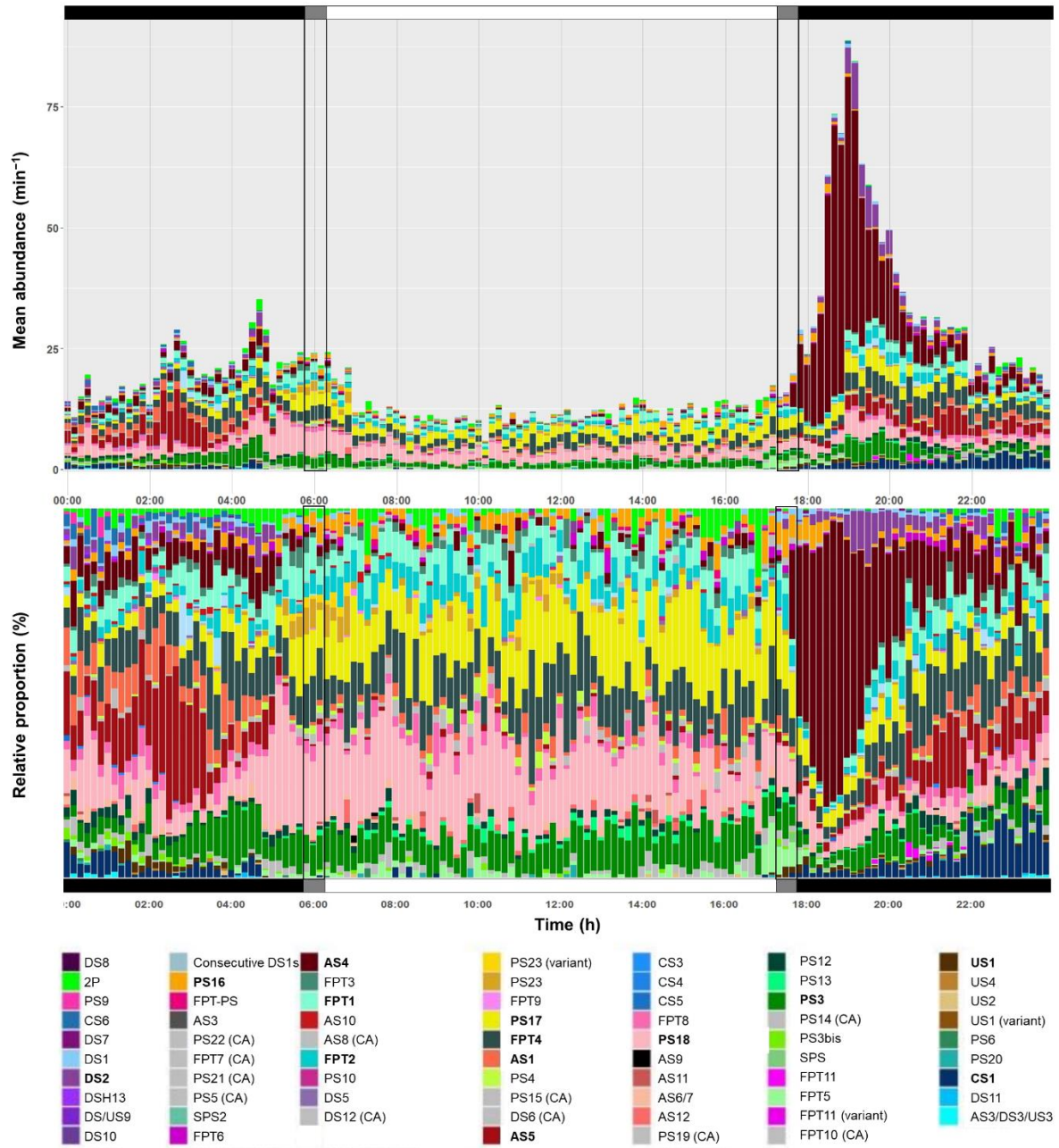
Figure A.2 Cumulative graph of mean abundance over time for all sound types at 60 m depth: absolute values (A) and relative proportion (B). Less abundant sound types lacking a clear diel cycle are colored in grey for ease of interpretation. The legend includes the annotation 'CA' (Cycle Absent) for such sounds. The 13 most abundant sound types, utilized in the models, are highlighted in bold.
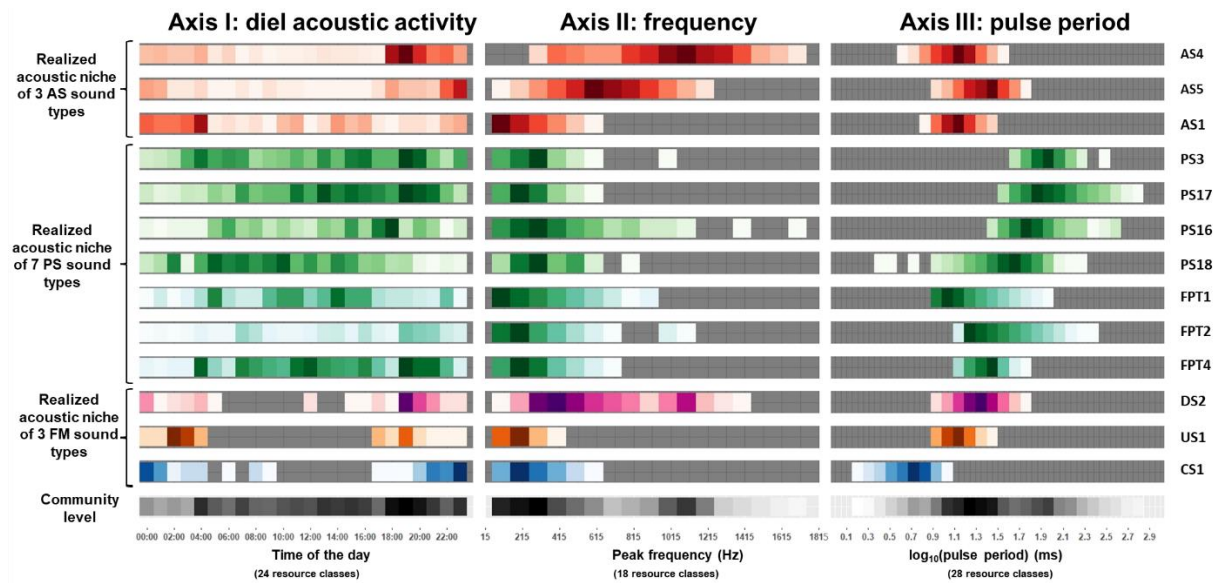
Figure A.3 Realized acoustic niche analysis of the 13 most abundant sound types and the entire community level at 60 m depth. Each panel represents an axis of the realized acoustic niche (axis I: diel acoustic activity, 24 resource classes; axis II: frequency, 18 resource classes; axis III: pulse period, 18 resource classes). Data for each axis were organized in a resource matrix, where each row represented a sound type and each column a resource class. For each sound type and resource axis, the number of sounds associated with each resource class was calculated and is presented with a color scale as a relative percentage (where the darker the color, the higher the percentage). The range of acoustic resources utilized by the entire acoustic community was calculated from the sum of all sounds present in each resource class for each of the three axes.
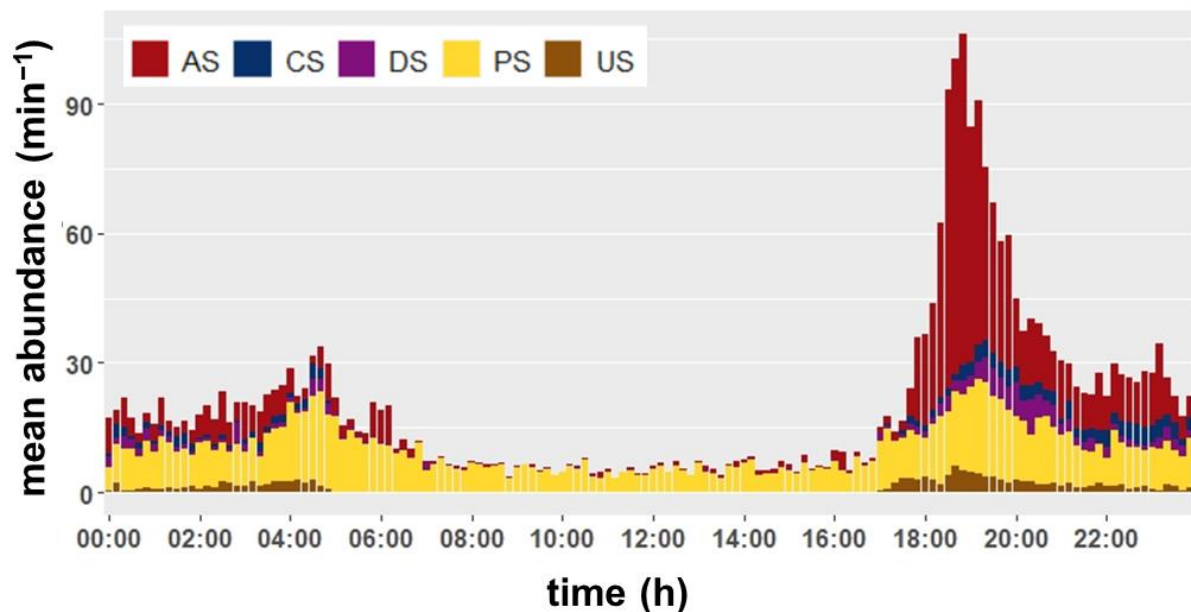
Figure A.4 Cumulative graph of mean abundance over time for all sound types at 120 m depth with sound types grouped for better visualization. AS = arched sounds. CS = complex sounds. DS = downsweeps, PS = pulse series, US = upsweeps. In the main text, CS, DS, and US are grouped within FM.

Table A.1 Localization (type of island, latitude, longitude) and period of sampling (year, month, and day) for three studied islands in the Tuamotu Archipelago. For all the islands, two depths were studied: 60 m and 120 m.

Island	Type	Lat (S)	Long (W)	Year	Month	Day
Rangiroa	Atoll	14.980°	147.613°	2018	Oct-Nov	30th-2nd
Raroia	Atoll	16.023°	142.463°	2018	March	2nd-5th
Tikehau	Atoll	15.017°	148.287°	2018	October	15th-18th

Table A.2 Abundance of each sound type per depth. Rare fish sounds are not included.

Sound type	120 m	60 m	120 + 60 m
2P	204	417	621
AS1	276	763	1039
AS3	9	5	14
AS3/DS3/US3	0	16	16
AS4	6474	5076	11550
AS5	2317	1750	4067
AS7	119	271	390
AS8	0	10	10
AS9	43	4	47
AS10	28	60	88
AS11	95	30	125
AS12	287	77	364
CS1	1162	721	1883
CS3	20	12	32
CS4	15	5	20
CS5	3	10	13
CS6	219	158	377
DS/US9	11	2	13
DS1	229	233	462
Consecutive DS1s	43	2	45
DS10	6	7	13
DS11	5	12	17
DS12	27	22	49
DS13	23	44	67
DS2	380	718	1098
DS5	67	77	144
DS6	10	51	61
DS7	216	10	226
DS8	276	0	276
FPT1	73	1279	1352
FPT2	525	1074	1599
FPT3	50	394	444
FPT4	825	2738	3563
FPT5	188	223	411
FPT6	143	152	295
FPT7	57	19	76
FPT8	280	651	931
FPT9	21	20	41
FPT10	60	3	63
FPT11	145	31	176
FPT11 (variant)	123	5	128
FPT-PS	12	47	59
PS3	4321	1847	6168
PS3bis	8	83	91
PS4	293	148	441
PS5	150	75	225
PS6	25	12	37
PS9	36	30	66
PS10	17	12	29
PS12	491	383	874
PS13	6	152	158
PS14	136	312	448
PS15	43	225	268
PS16	1093	572	1665
PS17	2128	2318	4446

PS18	255	2712	2967
PS19	12	12	24
PS20	32	20	52
PS21	21	6	27
PS22	27	19	46
PS23	100	349	449
SPS1	12	6	18
SPS2	16	0	16
US1	1024	157	1181
US1 (variant)	91	0	91
US2	129	9	138
US4	41	24	65