

Anexos

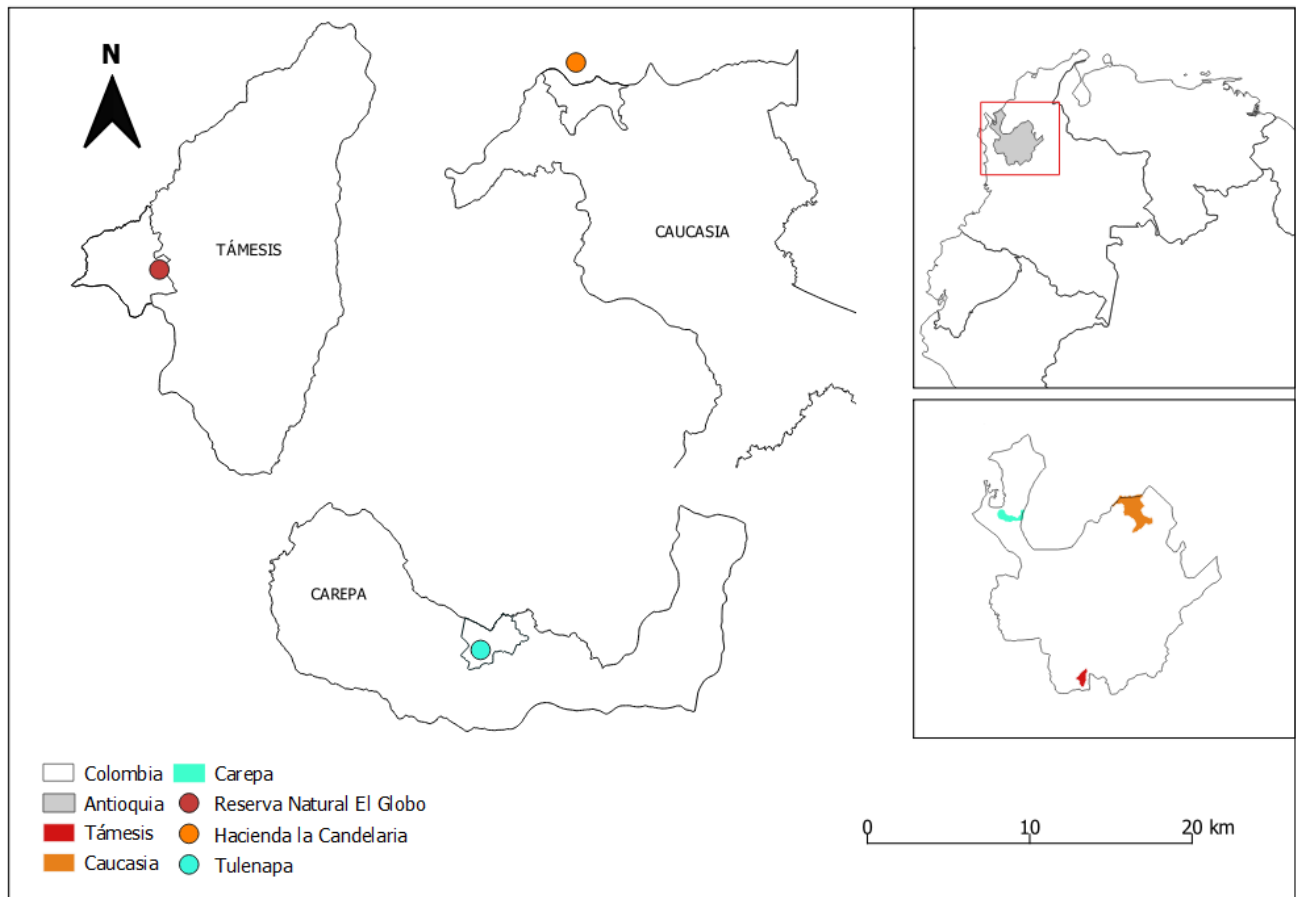
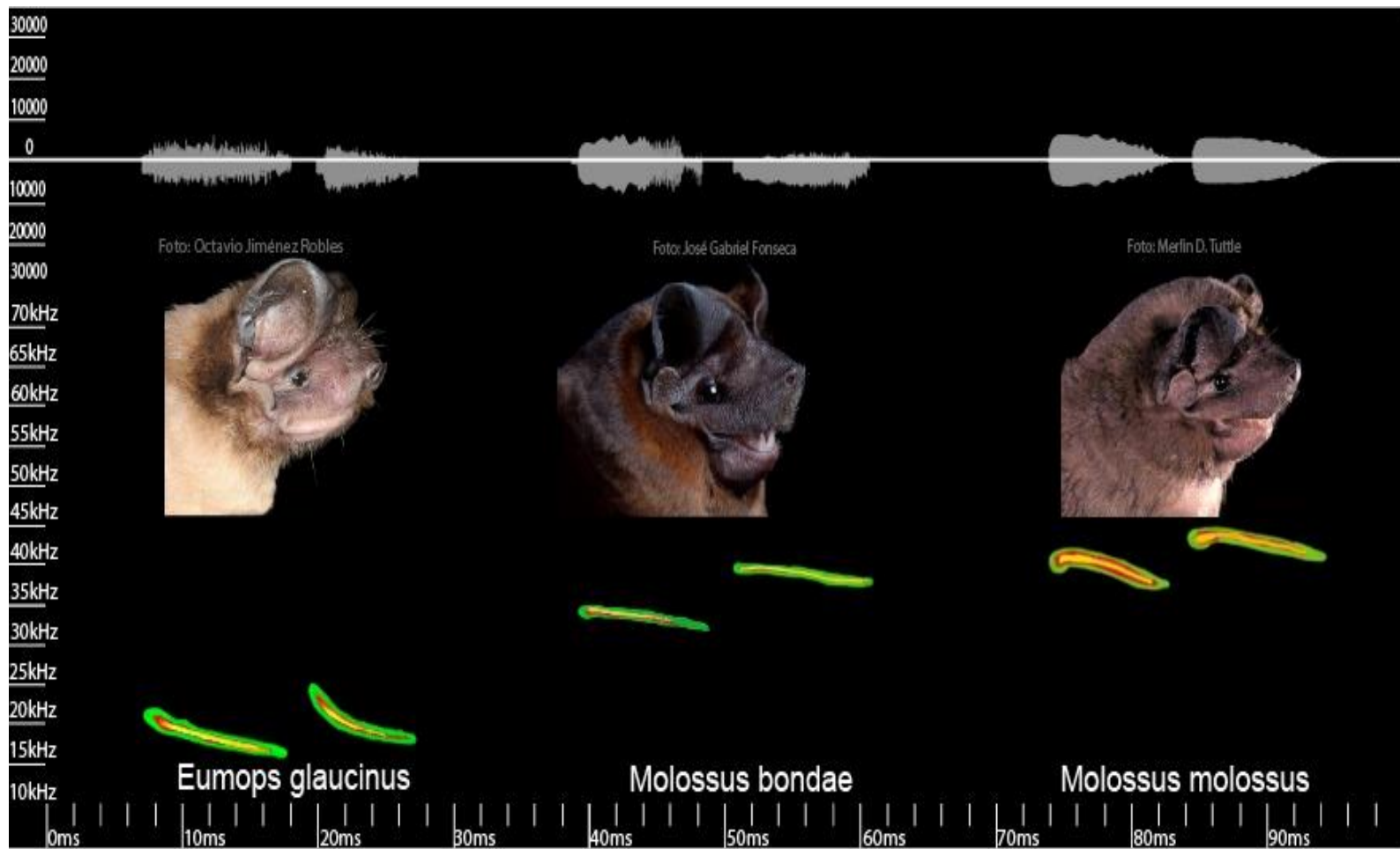


Figura 1



**Figura 2**

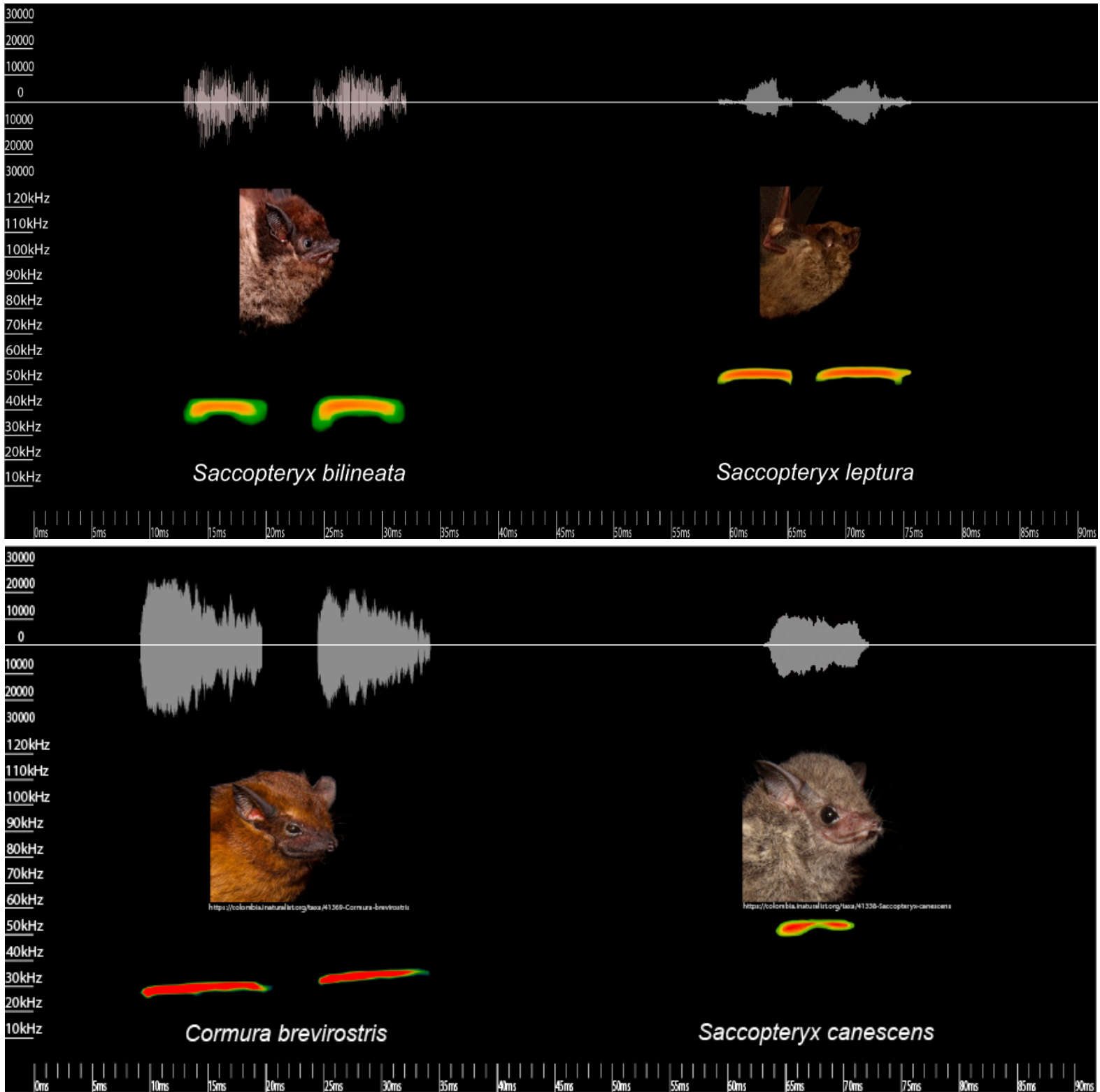


Figura 3

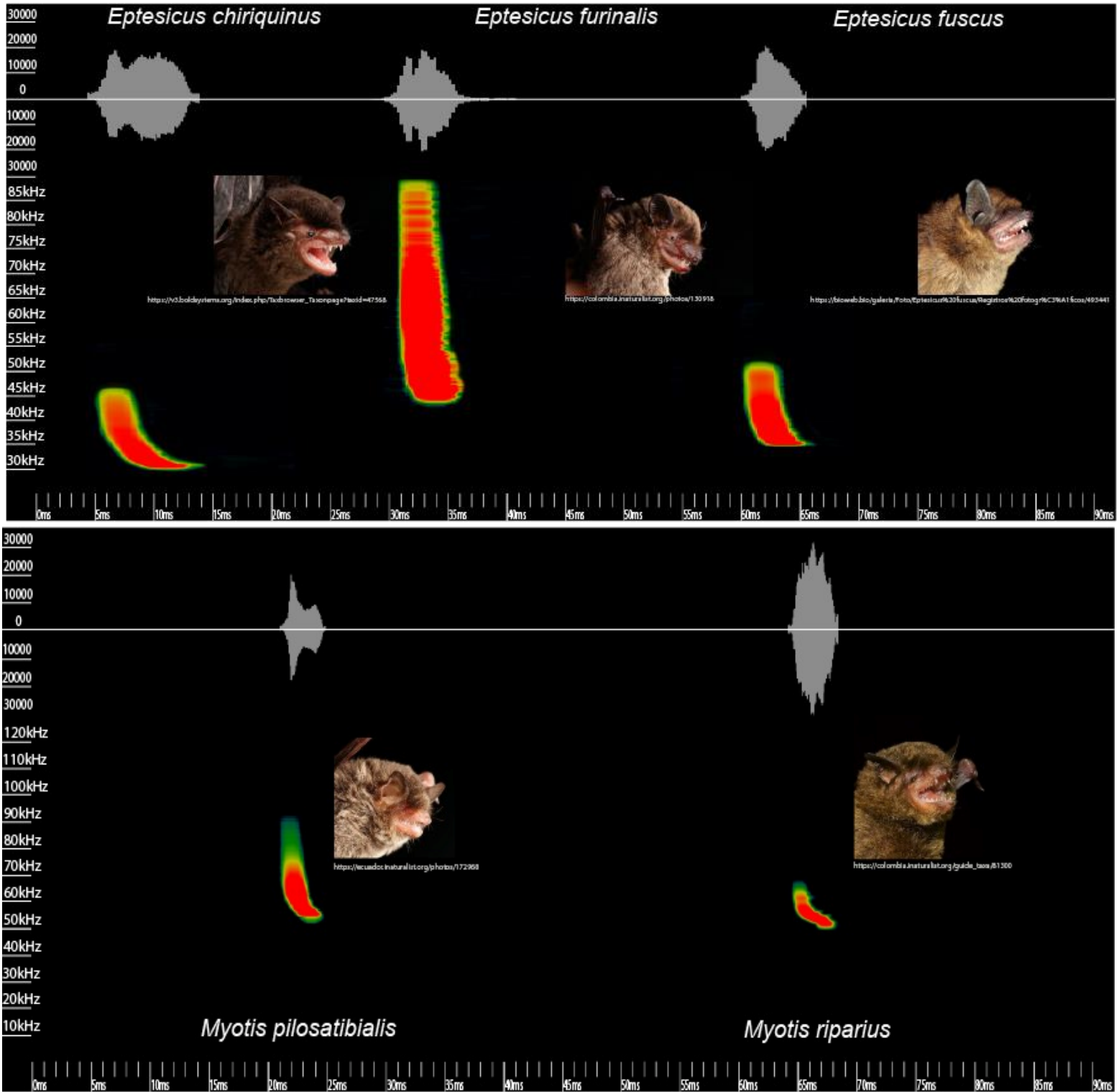


Figura 4

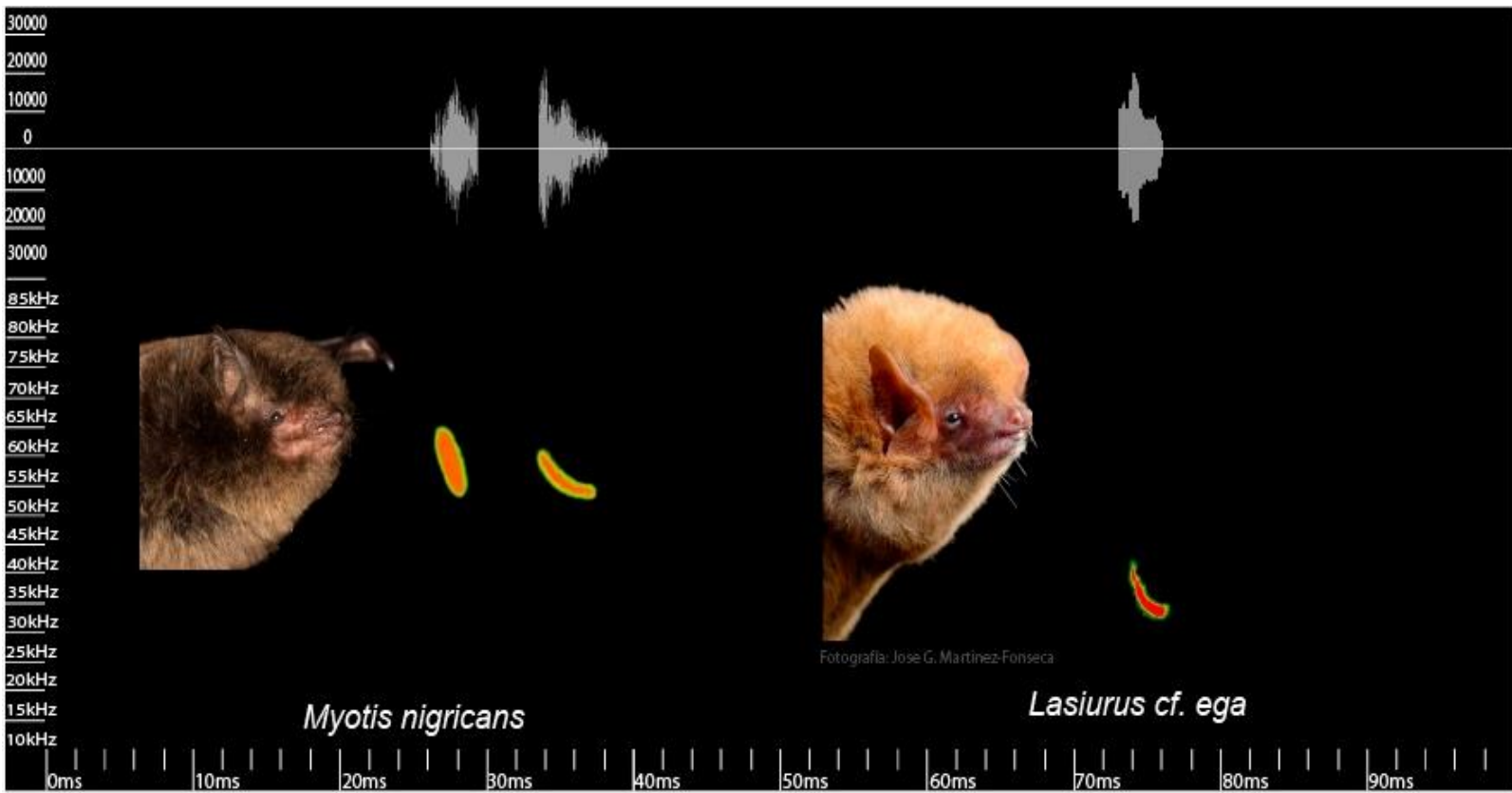


Figura 5

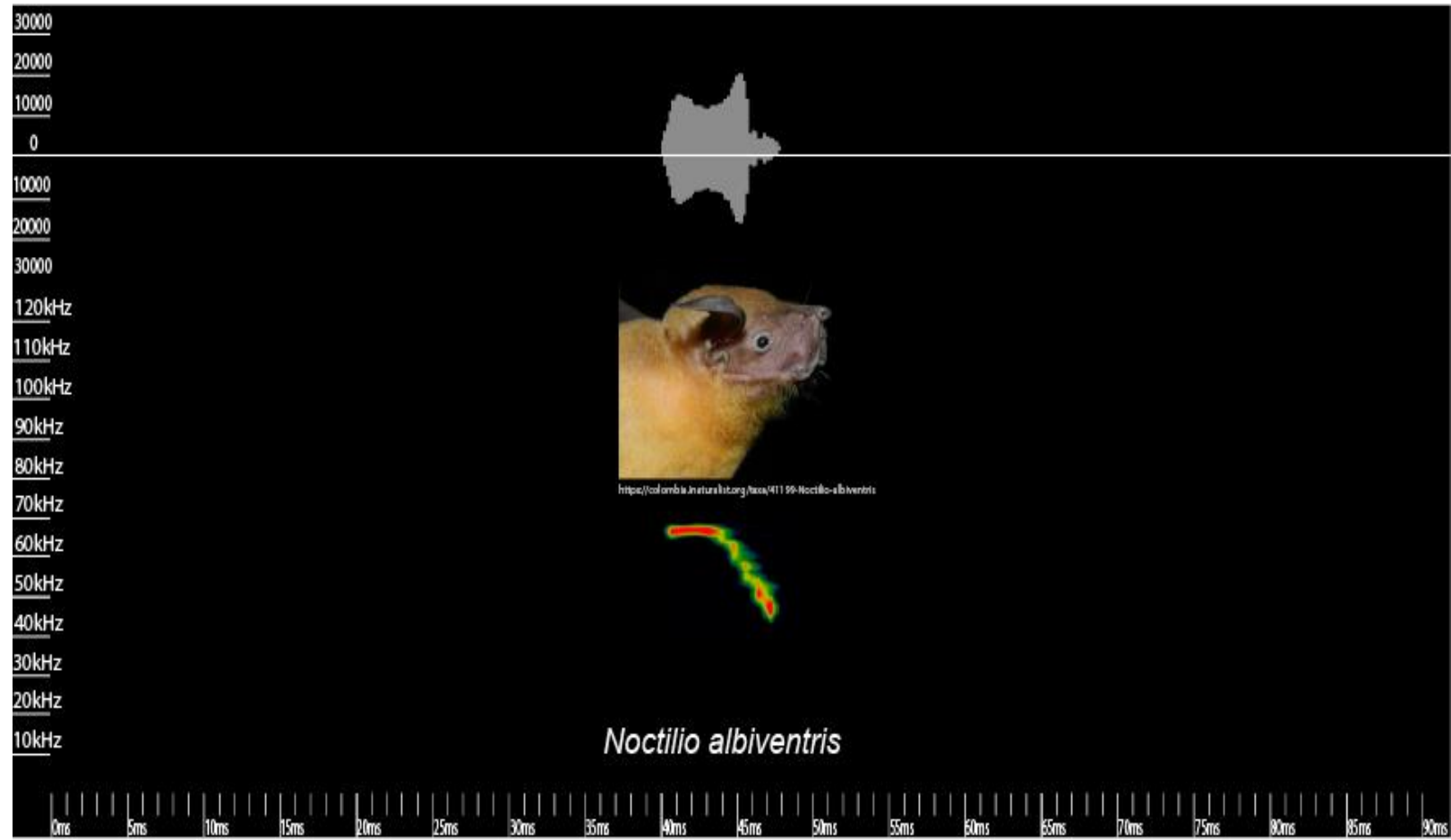
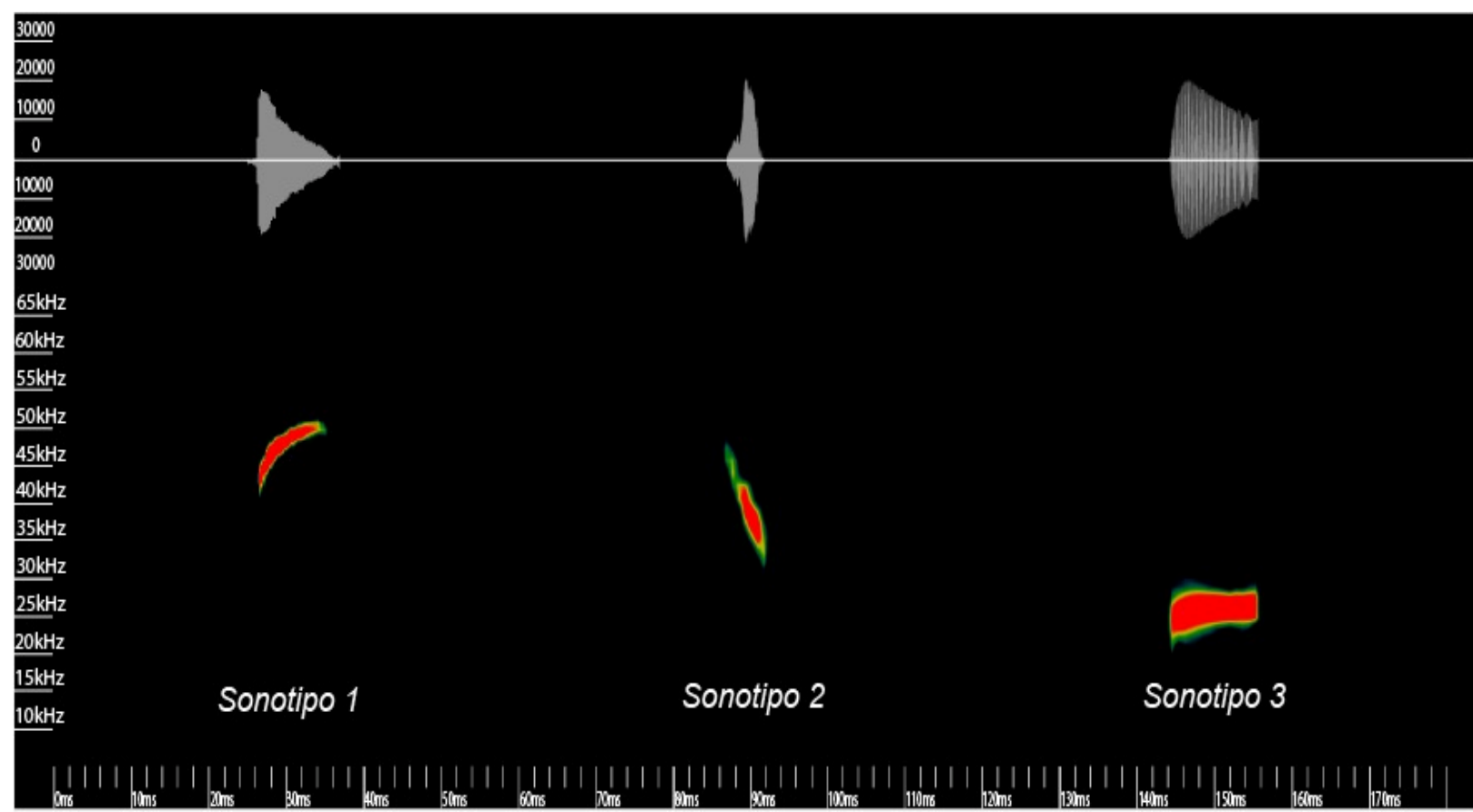


Figura 6



**Figura 7**

Tabla 1

Familia	Especie	Localidad		
		Támesis	Carepa	Caucasia
Emballonuridae	<i>Saccopteryx bilineata</i>	0	13	24
	<i>Saccopteryx canescens</i>	0	0	6
	<i>Saccopteryx leptura</i>	0	12	20
	<i>Cormura brevirostris</i>	0	1	3
	<i>Sonotipo 1</i>	0	0	1
Noctilionidae	<i>Noctilio albiventris</i>	0	2	1
Vespertilionidae	<i>Eptesicus chiriquinus</i>	4	0	0
	<i>Eptesicus furinalis</i>	5	0	0
	<i>Eptesicus fuscus</i>	2	0	0
	<i>Lasiurus ega</i>	2	1	1
	<i>Myotis pilosatibialis</i>	0	5	10
	<i>Myotis nigricans</i>	0	7	9
	<i>Myotis riparius</i>	0	0	25
	<i>Sonotipo 2</i>	0	0	1
Molossidae	<i>Eumops glaucinus</i>	0	8	7
	<i>Molossus bandae</i>	0	16	15
	<i>Molossus molossus</i>	0	15	20
	<i>Sonotipo 3</i>	0	0	1



**Tabla 2**

especie	localidad	tipo	Pulso (ms)				Frecuencia (kHz)				Referencia			
			n	Dr	FS	FE	Fmax	Fmin	Fmean	FME				
<i>Molossus molossus</i>	Caucasia Carepa	Bajo	20	5.94 ± 2.33	33.65 ± 0.90	28.42 ± 1.05	33.26 ± 1.05	30.31 ± 1.49	31.93 ± 1.07	32.06166667 ± 1.295	Este estudio			
			15	6.63 ± 2.50	30.59 ± 1.00	36.86 ± 1.00	35.96 ± 1.09	32.12 ± 1.80	34.68 ± 1.27	35.77 ± 1.10				
	Caucasia Carepa		Alto	7.63 ± 6.63	39.63 ± 0.80	33.30 ± 0.20	37.38 ± 0.25	34.41 ± 0.10	36.40 ± 0.57	35.90 ± 1.37	Llamada de referencia Briones et al, 2013 Gómez et al, 2021 Jung et al, 2014			
				9.54 ± 2.06			33.65 ± 2.82							
				5.52			32.50	30.31	31.51	31.87				
				10.14 ± 1.40	33.50 ± 1.20	35.60 ± 0.90								
	21	4.59 ± 1.77	39.72 ± 1.49	35.92 ± 1.37	38.90 ± 1.63	36.36 ± 1.89	37.76 ± 1.62	37.84 ± 1.82	Este estudio					
	10	5.06 ± 0.78	37.54 ± 1.64	44.79 ± 1.53	43.11 ± 1.79	38.76 ± 1.83	41.65 ± 1.58	42.85 ± 1.87						
	Caucasia Carepa	Alto	5.94 ± 3.87	46.93 ± 0.6	39.13 ± 1.7	44.33 ± 0.52	41.6 ± 1.68	43.05 ± 1	43.13 ± 0.5	Llamada de referencia Briones et al, 2013 Gómez et al, 2021 Jung et al, 2014				
			9.54 ± 2.06			38.55 ± 3.17								
5.52					32.50	30.31	31.51	31.87						
10.40 ± 2.20			39.80 ± 1.20	42.80 ± 0.80										
<i>Molossus bondae</i>	Caucasia Carepa	Bajo	15	11.24 ± 2.16	31.72 ± 0.88	23.84 ± 1.16	30.97 ± 0.88	25.12 ± 1.80	28.92 ± 0.83	29.77 ± 1.05	Este estudio			
			16	13.05 ± 2.00	33.68 ± 1.33	23.08 ± 1.51	32.62 ± 1.13	25.53 ± 2.16	30.28 ± 1.00	31.00 ± 1.27	Este estudio			
			17	5.52			31.20	25.66	28.05	25.42	Gómez et al, 2021			
	Caucasia Carepa	Alto	15	9.74 ± 3.35	36.92 ± 18.08	31.69 ± 1.22	36.18 ± 1.02	32.48 ± 1.62	34.50 ± 0.95	34.36 ± 1.15	Este estudio			
			16	8.21 ± 3.00	34.82 ± 0.53	31.23 ± 0.70	34.08 ± 0.48	31.52 ± 0.44	32.98 ± 0.26	33.52 ± 0.37	Este estudio			
<i>Eumops glaucinus</i>	Caucasia Carepa	Alto	7	10.85 ± 5.17	32.05 ± 1.87	24.18 ± 1.70	31.47 ± 2.00	26.01 ± 2.00	28.02 ± 1.80	26.56 ± 2.00	Este estudio			
			8	12.27 ± 4.13	24.45 ± 0.72	31.72 ± 1.84	31.21 ± 1.57	25.32 ± 1.16	27.45 ± 1.01	26.89 ± 0.93	Jung et al, 2014			
			16.70 ± 4.50	29.30 ± 4.20	20.30 ± 0.30									
	Caucasia Carepa	Bajo	14	8.47 ± 4.52	26.37 ± 1.48	19.57 ± 2.00	25.42 ± 1.63	21.81 ± 3.00	23.39 ± 2.00	22.66 ± 2.62	Este estudio			
			9	10.87 ± 3.53	18.59 ± 0.48	25.63 ± 1.06	24.57 ± 1.31	20.26 ± 0.83	22.10 ± 0.86	21.52 ± 1.19	Jung et al, 2014 Llamada de referencia			
			16.00 ± 2.00	27.40 ± 3.50	19.00 ± 1.00									
			10.63	25.74	19.94	25.74	19.94	22.79						

**Tabla 3**

Especie	Localidad	Tipo	Pulso (ms)		Frecuencia (kHz)		Referencia										
			n	Dr (X ± SE)	n	FS (X ± SE)		n	FE (X ± SE)	n	Fmax (X ± SE)	n	Fmin (X ± SE)	n	Fmean (X ± SE)	n	FME (X ± SE)
<i>Saccopteryx leptura</i>	Caucasia Carepa	Alto	20	5.76 ± 1.7	72	44.64 ± 0.79	72	49.34 ± 0.53	72	47.59 ± 3.28	72	44.65 ± 3.34	72	46.9 ± 3.35	72	47.43 ± 3.32	Este estudio
			12	3.96 ± 2	12	45.46 ± 0.43	12	48.14 ± 0.53	12	48.17 ± 0.53	12	47.87 ± 0.52	12	45.32 ± 0.9	12	46.85 ± 0.33	
			12		12	44.74 ± 1.37	12	48.33 ± 0.59	12	45.09 ± 0.97	12		12	46.97 ± 0.26	12	47.01 ± 0.26	Llamada de referencia
			8		8	44.52 ± 1.14	8	49 ± 0.44	8	44.96 ± 1.27	8		8	47.49 ± 0.38	8	47.57 ± 0.42	Llamada de referencia
			44	9 ± 1		47.5 ± 1		48.4 ± 1.5		49.3 ± 1.1		47.5 ± 1		49 ± 1.2		48.7 ± 8.2	(Danny zurc, 2017)
			281	6.2 ± 3		47.1 ± 5		49 ± 3		48.8 ± 3.9		47 ± 1.2		49.5 ± 2.7		48.8 ± 3.9	(Danny zurc, 2017)
			132	6.8 ± 1.2											132	54.5 ± 1.8	(K. Jung et al., 2007)
			25	7.5 ± 0.9		51.4 ± 1.5			25	54.5 ± 0.8	25	51.4 ± 1.5			25	53.6 ± 0.7	Biscardi et al, 2004
			15	4.9 ± 1.1		42.9 ± 1.3			15	53.3 ± 1.2	15	42.9 ± 1.3			15	51.1 ± 1.2	Pio et al, 2010
	26							50.4 ±		48.5 ±			15	49.8 ±	(Barataud & Giosa, 2013)		
	29	5.4 ± 0.8	27	49.9 ± 1.3										42	56 ± 0.8	Kalko 1995	
	Caucasia Carepa	Bajo	20	6.05 ± 1.86	58	41.61 ± 1.17	58	46.74 ± 0.41	58	46.02 ± 0.52	58	41.98 ± 1.33	58	45.1 ± 0.46	58	45.68 ± 0.52	Este estudio
			12	5.17 ± 1.93	14	43.47 ± 1.38	14	46.4 ± 0.58	14	45.3 ± 0.58	14	46.17 ± 0.55	14	43.84 ± 1	14	45.15 ± 0.63	
			15		15	44.72 ± 1.06	15	48.98 ± 0.57	15	45.23 ± 1.34	15		15	47.44 ± 0.48	15	47.48 ± 0.5	Llamada de referencia
			25		25	44.17 ± 1.13	25	48.44 ± 0.38	25	44.57 ± 1.16	25		25	47.03 ± 0.4	25	47.1 ± 0.45	Llamada de referencia
			48	8 ± 2		45.1 ± 1.2		46.6 ± 1.1		47.3 ± 1	43	45.1 ± 1.2	40	47.2 ± 1		46.9 ± 1.2	(Danny zurc, 2017)
			281	6.3 ± 1.9	43	45.3 ± 8.9	44	47.2 ± 1.1	42	48 ± 8.7	48	44.2 ± 6.5	281	47.7 ± 8.9	40	48 ± 8.7	(Danny zurc, 2017)
25			7.5 ± 1.1	281	47.2 ± 2.2	281	47.2 ± 1.1	281	51.4 ± 0.9	281	47.2 ± 2.7			281	50.09 ± 0.9	Biscardi et al, 2004	
132			7.2 ± 1.5												51.3 ± 1.8	(K. Jung et al., 2007)	
26									48.7 ±		46.6 ±				52.7 ± 0.6	(Barataud & Giosa, 2013)	
31	5.3 ± 1	25	60.1 ± 20.5											Kalko 1995			
<i>Saccopteryx canescens</i>	Caucasia		6	5.93 ± 1.73	15	49.05 ± 0.99	15	55.47 ± 0.695	15	54.33 ± 0.465	15	50.61 ± 1	15	53.365 ± 0.45	15	53.945 ± 0.515	Este estudio
			18	4.71 ± 0.16	18	49.38 ± 0.41	18	60 ± 0.17	18	52.88 ± 1.6	18	48.61 ± 1.3	18	50 ± 2.6	18	52.1 ± 1.9	Llamada de referencia
			12	4.6 ± 0.33	12	50.06 ± 1.25	12	58.2 ± 0.75	12	54.01 ± 3.2	12	49.52 ± 2.6	12	51.86 ± 5.2	12	53.75 ± 3.75	Llamada de referencia
			46	5.5 ± 0.9	46	53.4 ± 1	40	54.9 ± 1	40	55.4 ± 1	46	53.4 ± 1	46	55.6 ± 1	46	55.4 ± 1	(Danny zurc, 2017)
			203	5.1 ± 1.9	203	52.6 ± 2.1	203	54 ± 2	203	55.6 ± 1.2	160	53.2 ± 1.1	203	55.1 ± 2.2	203	55.6 ± 1.2	(Danny zurc, 2017)
			37							54,3 ±		52,3 ±					(Arias-Aguilar et al., 2018)
			30							54,3 ±		52,3 ±					(Barataud & Giosa, 2013)
<i>Saccopteryx bilineata</i>	Carepa Caucasia	Alto	13	5.86 ± 2.03	47	44.47 ± 0.79	47	47.78 ± 0.435	47	47.15 ± 0.425	47	44.36 ± 0.705	47	46.39 ± 0.375	47	46.86 ± 0.415	Este estudio
			24	5.97 ± 1.95	19	40.94 ± 0.56	19	47.18 ± 1.07	19	44.81 ± 0.44	19	41.95 ± 1	19	44.21 ± 0.43	19	44.76 ± 0.45	
			8	7.96 ± 4.71	8	43.86 ± 0.5	8	49.84 ± 0.37	8	47.64 ± 1.12	8	45.83 ± 0.61	8	46.6 ± 0.4	8	46.46 ± 0.52	Llamada de referencia
			15	6.16 ± 0.3	15	46 ± 0.65	15	48.45 ± 0.1	15	48.35 ± 0.21	15	44.3 ± 2.37	15	47.11 ± 0.7	15	46.25 ± 0.37	Llamada de referencia
			22	8.2 ± 2	21	43.8 ± 1.4	22	44.8 ± 1	22	44.9 ± 1	21	43.8 ± 1.4	21	45 ± 1	22	44.9 ± 1	(Danny zurc, 2017)
			20	9.8 ± 1.1	17	42.8 ± 1.3	20	41.4 ± 2.1	20	43.5 ± 8.9	20	41.1 ± 0.02	16	44 ± 7.9	20	41.6 ± 9.2	
			44	8.8 ± 1.0						46.8 ± 0.8		46 ± 0.8					
	25	8.6 ± 0.9		43 ± 0.99						43 ± 0.99				47 ± 0.6	Kakoben et al, 2012		
	40	6.6 ± 0.15		46.6 ± 0.19						46.6 ± 0.19				45.9 ± 0.4	Biscardi et al, 2004		
	23	9 ± 1.7		44.8 ± 0.46						44.8 ± 0.46				48.7 ± 0.17	O'Farell & Miller 1997		
	20							44,3 ±		44 ±				47.6 ± 0.22	Barclay 1983		
	Carepa Caucasia	Bajo	13	5.37 ± 2.13	25	41.8 ± 0.78	25	45.24 ± 0.5	25	44.79 ± 0.37	25	42.16 ± 0.86	25	44.06 ± 0.34	25	44.5 ± 0.39	Este estudio
			24	6.24 ± 2.6	24	37.1 ± 1.24	24	44.29 ± 1.14	24	42.4 ± 0.72	24	38.88 ± 1.19	24	41.54 ± 0.76	24	41.54 ± 0.76	
			6	7.68 ± 3.5	6	40.18 ± 1.12	6	46.85 ± 1	6	44.67 ± 0.77	6	41.86 ± 1.21	6	42.68 ± 2.74	6	43.9 ± 0.78	Llamada de referencia
15			2.6 ± 0.8	15	40 ± 0.43	15	47.69 ± 0.1	15	46.52 ± 0.77	15	41.37 ± 1.37	15	44.85 ± 0.82	15	44.26 ± 2.05	Llamada de referencia	
22			8.1 ± 1.5	19	41 ± 1.4	22	42.5 ± 1.4	22	43.2 ± 1.3	22	41 ± 1.4	22	42.6 ± 1.2	20	42.4 ± 1.3	(Danny zurc, 2017)	
20			7.7 ± 2.5	17	40.1 ± 1.4	20	42.5 ± 6.2	20	41.2 ± 1.1	17	39-1 ± 1.8	16	42 ± 7.6	22	42.5 ± 6.2		
			9.2 ± 1.1						44,5 ± 0.7		43,7 ± 0.7						
25	9.7 ± 0.9		44 ± 0.9				46.4 ± 0.5		44 ± 0.9				45.7 ± 0.5	(Arias-Aguilar et al., 2018)			
40	6.7 ± 0.21		44.5 ± 0.21						44.5 ± 0.21				46.6 ± 0.18	Biscardi et al, 2004			
21							42,2 ±		41,2 ±					O'Farell & Miller 1997			
														(Barataud & Giosa, 2013)			
<i>Cormura brevirostris</i>	Carepa Caucasia	Alto	1	3.20 ± 0.97	11	24.28 ± 0.51	11	28.10 ± 0.64	11	26.49 ± 0.44	11	25.26 ± 0.36	11	25.89 ± 0.38	11	25.71 ± 0.55	Este estudio
			4	3.71 ± 1.33	7	28.82 ± 0.44	7	32.27 ± 0.7	7	30.83 ± 0.64	7	29.6 ± 0.34	7	30.24 ± 0.43	7	30.07 ± 0.44	

	Carepa	Bajo	1	6.90	±	2.69	9	24.07	±	0.31	9	28.15	±	0.24	9	24.15	±	0.48	9	25.83	±	0.45	9	26.17	±	0.71	Este estudio			
	Caucasia		4	8.17	±	2.6	13	28.01	±	0.5	13	31.23	±	0.66	13	30.48	±	0.56	13	28.09	±	0.42	13	29.55	±	0.38		13	29.73	±

**Tabla 4**

Especie	Localidad	n	Pulso (ms)			Frecuencia (kHz)										Referencia								
			Dr	FS	FE	Fmax	Fmin	Fmean	Fpeak															
<i>Myotis pilosatibialis</i>	Caucasia	18	5.145	±	1	52.835	±	0.87	70.885	±	5.695	84.96	±	8.11	53.53	±	0.89	57.455	±	1.68	54.21	±	0.875	Este estudio
	Carepa	10	4.78	±	0.93	50.67	±	0.4	68.15	±	2.95	63.41	±	3.45	52.25	±	0.82	53.6	±	11.36	52.88	±	0.61	
		20	3.48	±	0.43	50.12	±	2.75	102.6	±	14.66	95.86	±	1.21	54.4	±	0.31	64.32	±	0.55	54.91	±	0.56	Llamada de referencia
		21	4.95	±	0.65	49.25	±	0.01	71.61	±	2.6	60.74	±	2.48	52.36	±	0.68	54.57	±	0.51	53.21	±	0.19	Llamada de referencia
		20	3.48	±	0.43	50.12	±	2.75	102.6	±	14.66	95.86	±	1.21	54.4	±	0.31	64.32	±	0.55	54.91	±	0.56	Llamada de referencia
<i>Myotis riparius</i>			3.9	±	0.4															56.7	±	1.4	Rydell et al, 2002	
	Caucasia	25	3.31	±	0.92	54.19	±	0.66	65.43	±	2.41	62.77	±	3.57	55.14	±	0.94	57.15	±	1.22	55.55	±	0.85	Este estudio
		21	4.95	±	0.65	49.25	±	0.01	71.61	±	2.6	60.74	±	2.48	52.36	±	0.68	54.57	±	0.51	53.21	±	0.19	Llamada de referencia
<i>Myotis nigricans</i>			7.2			62														54			Simers eta al, 2011	
	Caucasia	17	2.73	±	0.51	47.37	±	1.45	74.24	±	3.62	69.63	±	7	49.37	±	1.61	55.97	±	2.88	52.27	±	1	Este estudio
	Carepa	12	3.94	±	1.14	47.27	±	1.21	64.76	±	6.44	63.34	±	7.3	48.33	±	1.51	53.28	±	1.78	50.57	±	3.44	
		22	4.45	±	0.02	33.7	±	0.31	66.21	±	5.04	59.89	±	5.17	37.55	±	0.27	44.54	±	1.67	38.31	±	0.36	Llamada de referencia
	10	3.6									63.28			49.04			51.96			49.26			Gómez et al, 2021	
<i>Eptesicus chiriquinus</i>	Támesis	4	7.06	±	1.5	54.33	±	8.37	31.54	±	1.03	51.91	±	7.48	32.62	±	0.55	37	±	1	32.78	±	0.56	Este estudio
		47	7.80	±	3.77	55.83	±	11.48	33.30	±	3.46	55.83	±	11.48	32.93	±	3.46							Aguilar et al, 2017
			7.8	±	3.8							55.8	±	11.5	32.9	±	3.5				37.1	±	6	Ortega et al, 2022
		55	7.6	±	1.6	54.21						53.9	±	20	32	±	2.6							Barataud et al, 2013
		59	2.61	±		68	±		32.23	±		53.09	±		33.64		19	39.98		4	34.3		6.00	Llamada de referencia
<i>Eptesicus furinalis</i>	Támesis	5	4.22	±	1.37	40.72	±	1.03	62.92	±	7.72	60.94	±	8.32	41.16	±	0.88	46.12	±	1.56	41.56	±	0.79	Este estudio
		47	6.91	±	1.72	37.40	±	8.69	56.34	±	1.45	56.34	±	8.69	37.05	±	1.2							Aguilar et al, 2018
			6.9	±	1.7							56.3	±	8.7	37.1	±	1.2				39.7	±	3.5	Ortega et al, 2022
<i>Eptesicus fuscus</i>			2.39								59.53			46.45			49.75			46.79			Gómez et al, 2021	
	Támesis	2	4.79	±	1.23	33.53	±	0.77	55.37	±	11.05	62.2	±	11.44	34.22	±	0.64	42.84	±	2	34.5	±	0.62	Este estudio
			6	±	2.2							59.3	±	10.6	29.3	±	4.6				34.7	±	5.7	Ortega et al, 2022
		20	4.76									45.51			30.53			34.95			31.21			Gómez et al, 2021
<i>Lasiurus ega</i>		14	6.19	±	1.83							55.19	±	9.19	31.43	±	1.61							Briones et al, 2013
	Támesis	2	2.61	±	0.53	44.97	±	1.01	75.49	±	10.16	73.44	±	13.54	45.2	±	1.63	52.69	±	49.69	46.35	±	1.21	Este estudio
	Carepa	20	2.94	±	0.72	39.96	±	0.32	57.23	±	3.67	56.5	±	3.5	43.43	±	1.73	48.94	±	2.19	45.06	±	3.2	
				2.93	±	0.51	37.45	±	0.98	61.13	±	4.5	61.13	±	4.5	37.45	±	0.98				55.2	±	5.41
			2.9	±	0.5						61.1	±	4.5	37.5	±	1					40.7	±	2.1	Ortega et al, 2022

**Tabla 5**

Especie	Localidad	n	Pulso (ms)		Frecuencia (kHz)					Referencia
			Dur	FS	FE	Fmax	Fmin	Fmean (kHz)	Fpeak	
<i>Noctilio albiventris</i>	Caucasia	1	4.51 ± 2.01	66.90 ± 1.30	70.34 ± 0.94	70.04 ± 0.94	67.40 ± 1.41	69 ± 1.06	68.94 ± 1.08	Este estudio
	Carepa	2	5.46 ± 2.1	70.54 ± 1.33	75.32 ± 0.75	74.1 ± 0.55	70.95 ± 1.18	72.84 ± 0.44	72.8 ± 0.63	
		12	7.7 ± 1.60	68.47 ± 0.65	78.29 ± 0.43	74.16 ± 0.51	57.46 ± 0.3	68.50 ± 0.73	72.60 ± 0.88	Llamada de referencia
			7.97 ± 2.01	72.44 ± 1.37	77.49 ± 0.48	74.46 ± 2.47	57.22 ± 2.03	68.70 ± 1.63	73.06 ± 3.84	Llamada de referencia
			9,99	66,34	44,83	67,51	44,83			Aguilar et al, 2018