ETHOLOGY OF THE INVASIVE SIGNAL CRAYFISH (*PACIFASTACUS LENIUSCULUS*) IN NATURAL CONDITIONS

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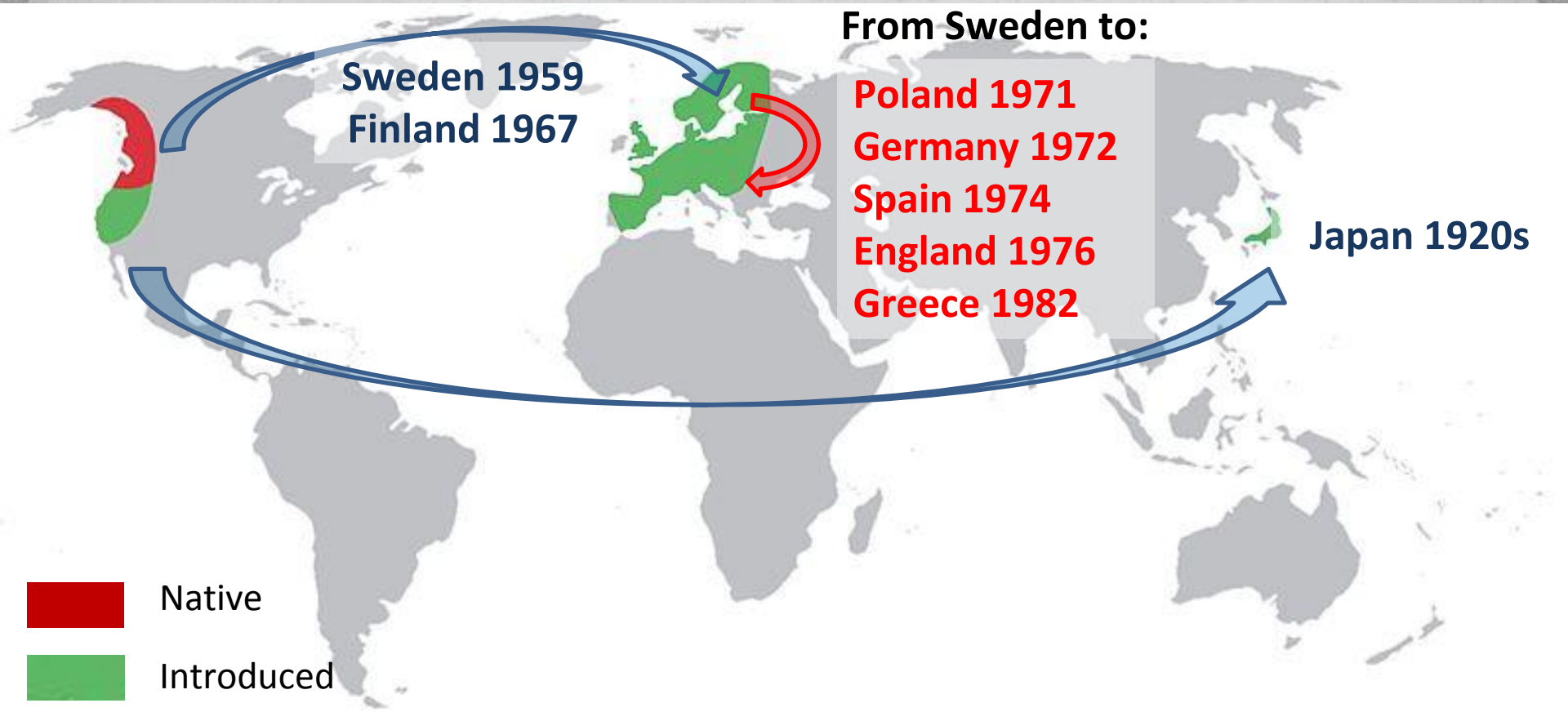
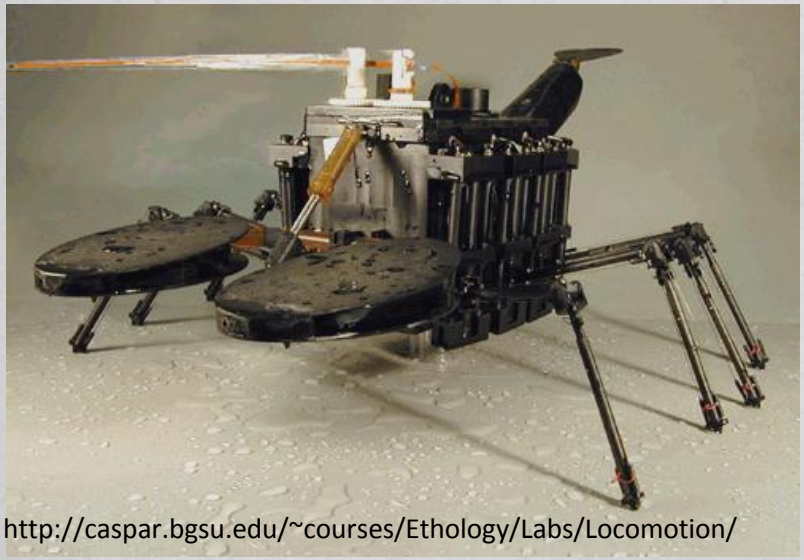
DISTRIBUTION RANGE



OBJECTIVE

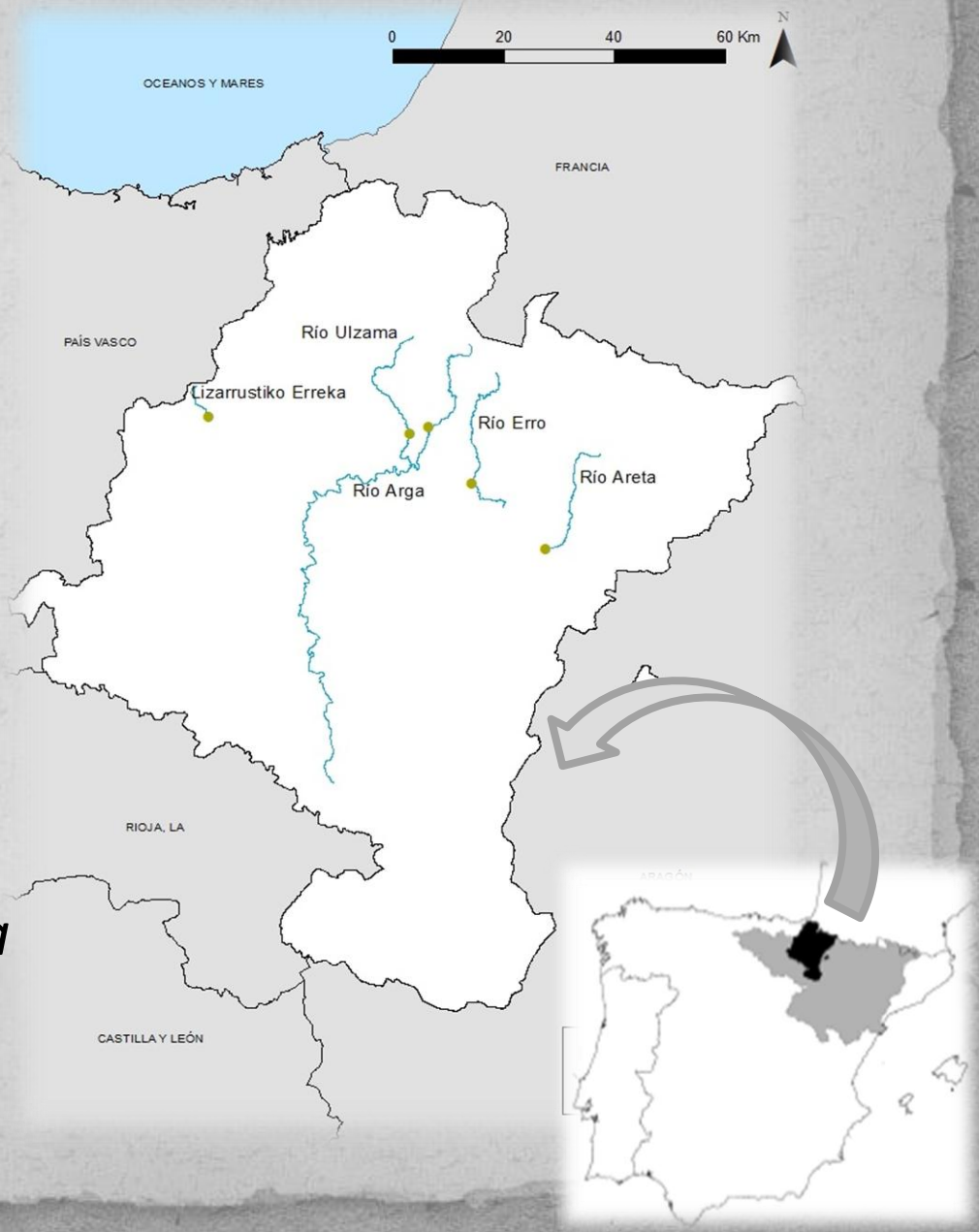
- Study the behaviour and activities of the invasive signal crayfish (*P. leniusculus*) and its relationships with native fishes in natural conditions (without manipulation).



http://caspar.bgsu.edu/~courses/Ethology/Labs/Locomotion/

STUDY AREA

- 5 sampling points
- May-July (nights)
- Depth: 0,3 y 0,5 m
- With signal crayfish
- With benthonic fishes (*Cobitis calderoni, Barbatula quignardi*).



STUDY DESIGN

Video presentación.mp4

RECORDINGS...

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1	Video	T_Video	ID_Crayfish	Sex	Length	Comportamiento	Inicio	Event_Crayfish
1019	4	1:50:09	33	macho	adulto	debajo de piedra	0:12:43	
1020	4	1:50:09	33	macho	adulto	asoma pinzas	0:14:44	
1021	4	1:50:09	33	macho	adulto	asoma pinzas y cabeza	0:13:24	
1022	4	1:50:09	33	macho	adulto	evento	0:13:49	1
1023	4	1:50:09	33	macho	adulto	sale de piedra	0:14:13	
1024	4	1:50:09	33	macho	adulto	movimiento	0:14:14	
1025	4	1:50:09	33	macho	adulto	alimentandose	0:15:23	
1026	4	1:50:09	33	macho	adulto	movimiento	0:15:35	
1027	4	1:50:09	33	macho	adulto	evento	0:17:02	1
1028	4	1:50:09	33	macho	adulto	alimentandose	0:17:12	
1029	4	1:50:09	33	macho	adulto	movimiento	0:17:27	
1030	4	1:50:09	33	macho	adulto	evento	0:17:46	0
1031	4	1:50:09	33	macho	adulto	movimiento	0:17:46	
1032	4	1:50:09	33	macho	adulto	alimentandose	0:18:00	
1033	4	1:50:09	33	macho	adulto	arrastrado por corriente	0:18:34	
1034	4	1:50:09	33	macho	adulto	movimiento	0:18:36	
1035	4	1:50:09	33	macho	adulto	toca la estructura	0:19:24	
1036	4	1:50:09	33	macho	adulto	movimiento	0:20:09	
1037	4	1:50:09	33	macho	adulto	toca la estructura	0:20:47	
1038	4	1:50:09	33	macho	adulto	movimiento	0:21:22	
1039	4	1:50:09	33	macho	adulto	toca la estructura	0:21:32	
1040	4	1:50:09	33	macho	adulto	movimiento	0:21:38	
1041	4	1:50:09	33	macho	adulto	quieto	0:22:20	
1042	4	1:50:09	33	macho	adulto	movimiento	0:23:32	
1043	4	1:50:09	33	macho	adulto	quieto	0:23:59	
1044	4	1:50:09	33	macho	adulto	movimiento	0:24:23	
1045	4	1:50:09	33	macho	adulto	entre cámaras	0:24:39	
1046	4	1:50:09	33	macho	adulto	movimiento	0:27:07	
1047	4	1:50:09	33	macho	adulto	evento	0:27:39	1
1048	4	1:50:09	33	macho	adulto	movimiento	0:27:39	
1049	4	1:50:09	33	macho	adulto	alimentandose	0:28:03	

11-05-2015 | 02-06-2015 | **09-06-2015** | 25-06-2015 | 01-07-2015 | Ethograma

J

Descripción evento

rca, crayfish_32 levanta las pinzas

por encima de Crayfish_32, este levanta las pinzas

con otro crayfish y ambos se evitan

que habia en la pata de la estructura

trás a crayfish_33, este ultimo hulle

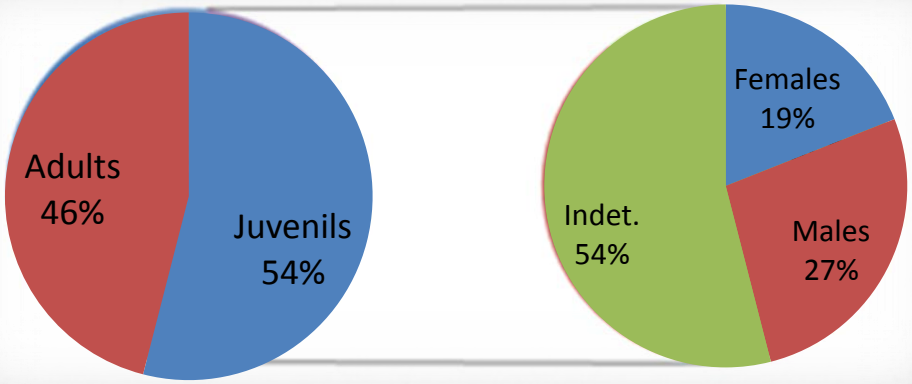
BEHAVIORS AND EVENTS

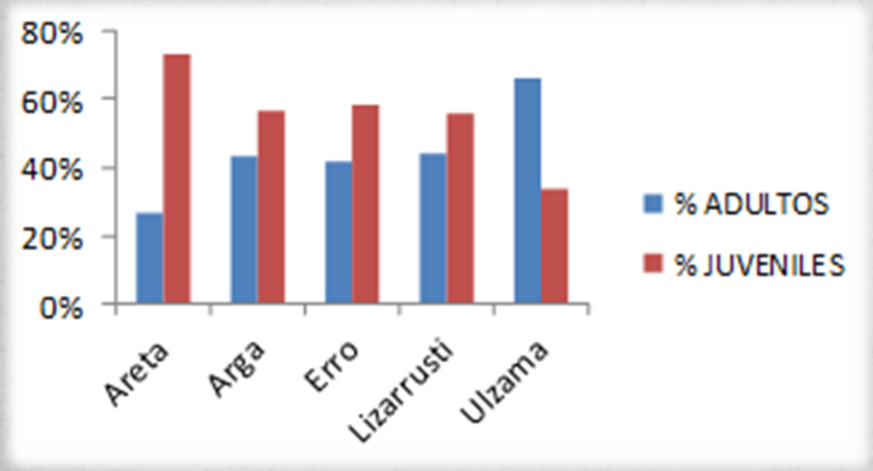
Behaviour	Definition
Feeding	Moving claws scraping detritus, leaf litter, etc., transporting material to the mouth
Looking out	Looking out under a stone (only the claws and part of the head is outside the stone)
Under stone*	Refugee under a stone
Event*	An interaction with another crayfish or fish
Claws under stone	Introducing claws in a groove or under a stone
Moving	Crayfish moving
Quiet*	Crayfish quiet
Touching structure	Touching the legs of the structure with the claws

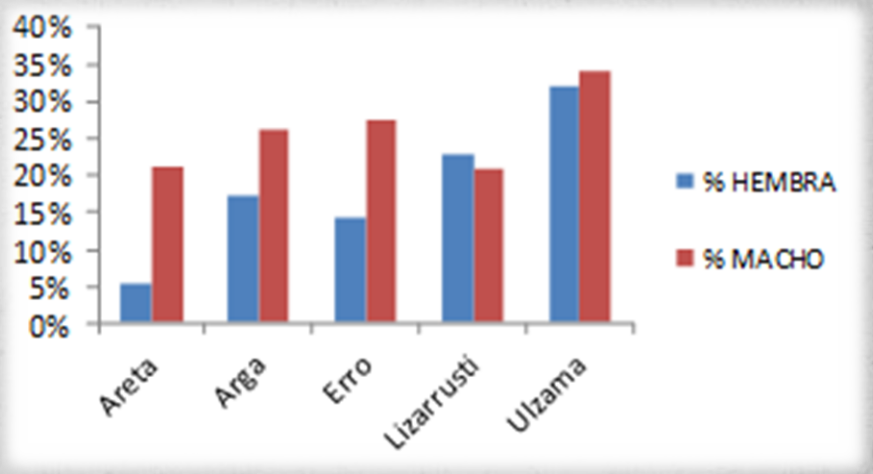
Events	
Escape*	Moving away fast from another crayfish or fish (backwards)
Aggression*	Aggressive behaviour with another crayfish
Passive	Avoiding interaction with other crayfish (quiet or moving away)

RESULTS

251 individuals analysed







ADULTS vs JUVENILES (behaviours)

Mann-Whitney U tests

BEHAVIOURS	Stage	N	Average	U Mann-Whitney (sig)
Feeding	Juvenil	136	125,93	0,113
	Adult	115	124,93	
Looking out	Juvenil	136	35,79	0,058
	Adult	115	63,23	
Under stone*	Juvenil	136	88,63	0,000
	Adult	115	66,57	
Event*	Juvenil	136	7,46	0,037
	Adult	115	27,9	
Claws under stone	Juvenil	136	15,1	0,19
	Adult	115	37,97	
Moving	Juvenil	136	193,48	0,626
	Adult	115	375,83	
Quiet*	Juvenil	136	39,6	0,04
	Adult	115	65,09	
Touching structure	Juvenil	136	0,88	0,375
	Adult	115	2,23	

ADULTS vs JUVENILES (events)

Contingency tables

		Adult	Juvenil
Aggression	Recount	43	19
	Expected frequency	35,7	26,3
	% del total	32,60%	14,40%
No aggression	Recount	33	37
	Expected frequency	40,3	29,7
	% del total	25,00%	28,00%

	Value	gl	Sig.
Chi-cuadrado	6,641(b)	1	0,010*

		Adult	Juvenil
Passive	Recount	11	8
	Expected frequency	10,9	8,1
	% del total	8,30%	6,10%
No passive	Recount	65	48
	Expected frequency	65,1	47,9
	% del total	49,20%	36,40%

	Value	gl	Sig.
Chi-cuadrado	,001(b)	1	0,976

		Adult	Juvenil
Escape	Recount	22	29
	Expected frequency	29,4	21,6
	% del total	16,70%	22 %
No escape	Recount	54	27
	Expected frequency	46,6	34,4
	% del total	40,90%	20,5%

	Value	gl	Sig.
Chi-cuadrado	7,093(b)	1	0,008*

CONCLUSIONS

- The largest number of males observed in that period of the year could be explained because the females have just released their eggs being more inactive
- The different spatial distribution of adults and juveniles could be determined by susceptibility to predators
- No statistical differences between the behaviours of males and females (but males seems to be more aggressive and territorial).

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CONCLUSIONS

- Different behaviour between adults and juveniles
  - **Aggressive intraspecific behaviour.** Adults**:** more aggressions, more time refugee, less active than juveniles
  - Adults displace juveniles to shadow areas being more vulnerable to predators
- Future interspecific studies of (shelter) competition with native fish

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THANK YOU!!!!

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