Annual Report
Year 2016/17

„Impacts of Invasive Aquatic Species (AIS)“

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PhD-Course: Biologia Evoluzionistica ed Ecologia

Cycle: 31

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Ictalurus punctatus – The North American Channel Catfish

Visible by the public **Appreciated by angler**

Regulary consumed **A nuisance for others**

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A brief look at the introduction history in Italy….

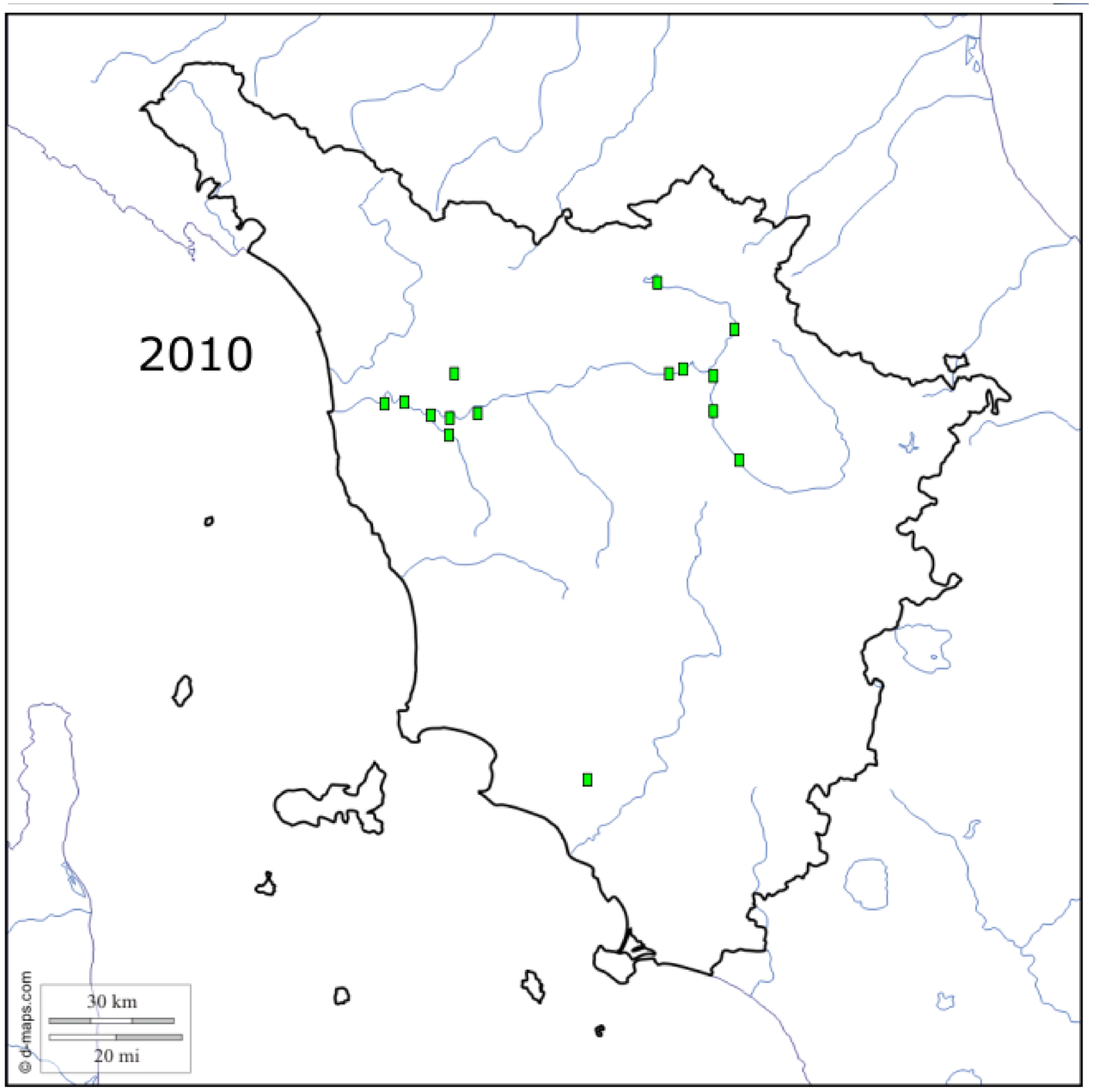
Being introduced to aquaculture in 1976…

Nome comune	Nome scientifico	2002	2003	2004	2005	2006	2007	2008	2009
PESCI									
Altromare		3,0	48,0	3,0					0,0
Anguilla	*Anguilla anguilla*	1.694,0	1.325,3	1.219,7	1.196,3	807,2	714,9	550,7	677,4
Carpa comune	*Cyprinus carpio (+ C.i. + H. m.)**	274,0	185,4	278,6	227,1	163,9	127,0	77,6	97,8
Cefalo & Muggini	Mugilidae	264,0	211,8	95,0	73,7	94,1	1.447,9	691,1	587,0
Dentice	*Dentex dentex*	3,0	3,0	6,0	3,0		175,0		
Ombrina & O.boccadoro	*Umbrina cirrosa & Argyrosomus regius*	131,0	197,0	146,0	186,0	172,0	123,3	154,0	69,8
Orata	*Sparus aurata*	5.326,0	5.973,3	6.267,5	6.922,9	6.345,5	5.811,3	5.457,4	6.178,5
Pantice	*Pagrus major x Dentex dentex*		28,0	28,0					
Persico	*Perca fluviatilis*		10,0	3,0	33,0	70,0	0,4	4,0	
Persico spigola	*Morone chrysops x M. saxatilis*	260,0	306,0	424,0	295,0	179,0	225,0	234,0	244,0
Persico trota	*Micropterus salmoides*		10,0	10,3	25,3	35,3	50,0	79,5	80,5
Pesce gatto	*Ictalurus (Ameiurus) melas*	352,0	451,5	380,5	325,3	212,2	95,3	86,6	138,4
Pesce gatto americano	*Ictalurus punctatus*			104,5	99,5	114,5	136,0	143,8	95,7

A brief look at the introduction history in Italy….

First observed in the river Oglio (North Itay) in 1986

First appearence in the river Arno (Tuscany, central Italy) in 1998



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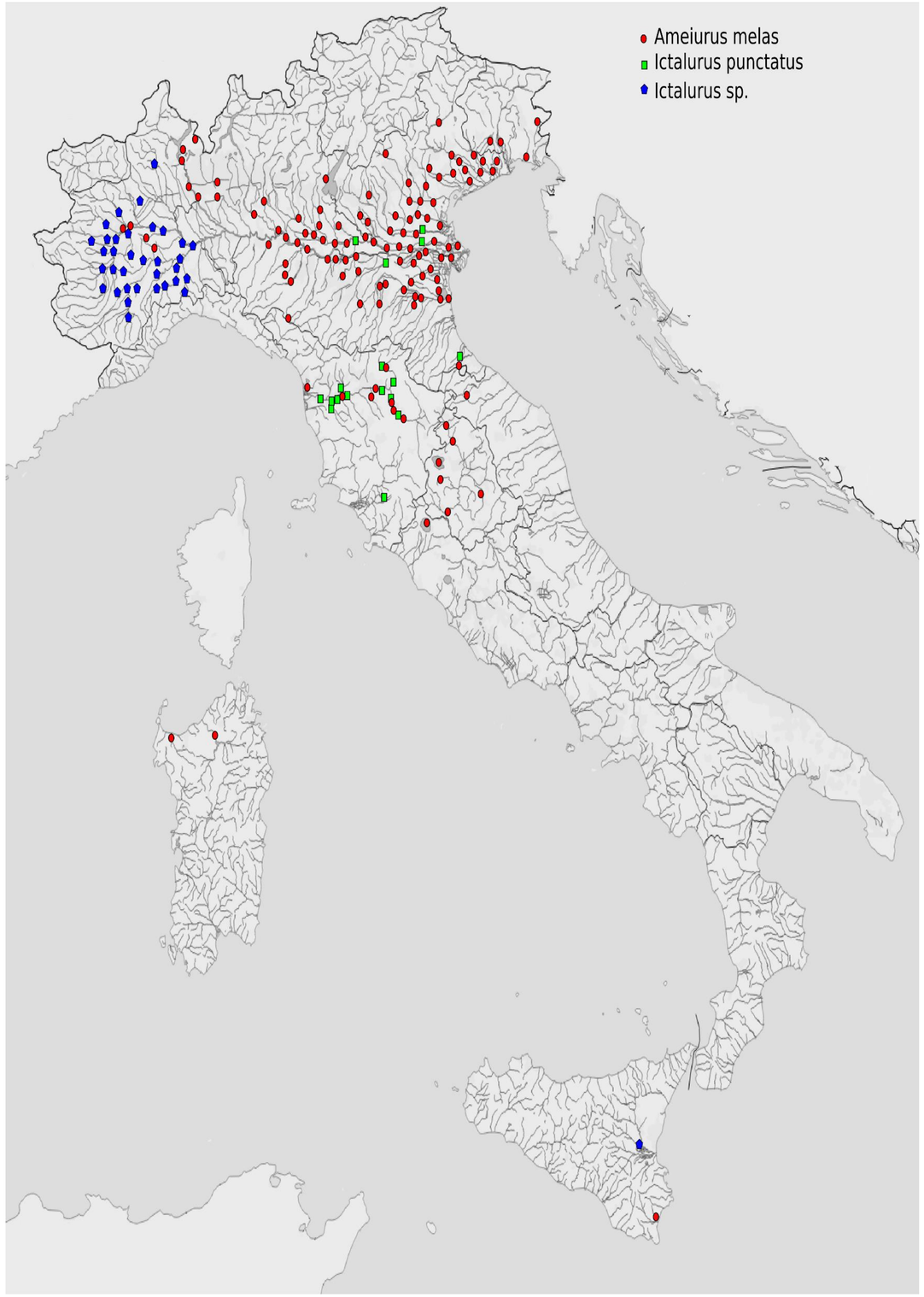
A brief look at the introduction history in Italy….

2014:



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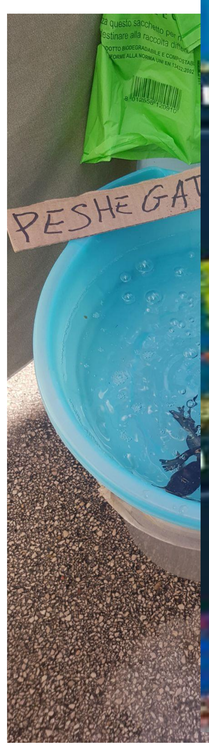
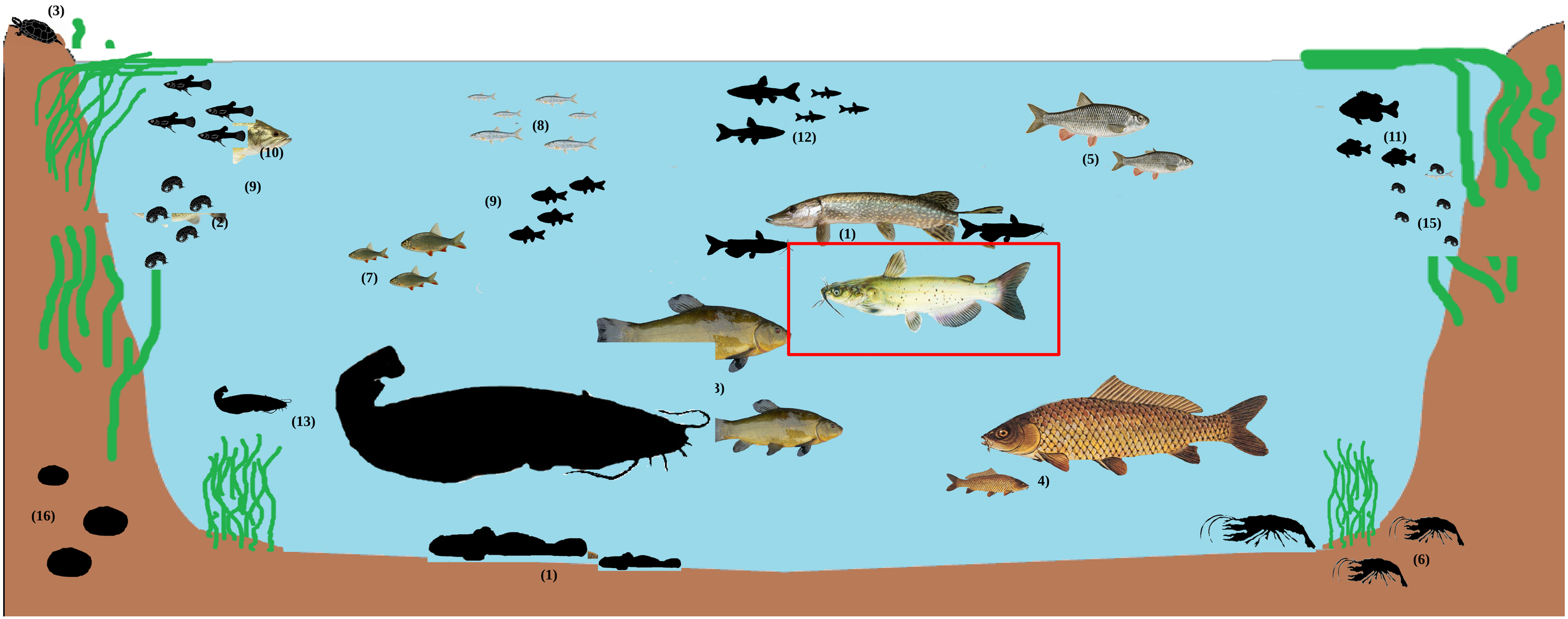
A brief look at the introduction history in Italy….



The situation before 1998 – 2000, …



- *Esox lucius* (1)
- *Sander lucioperca* (2)
- *Tinca tinca* (3)
- *Cyprinus carpio* (4*)
- *Squalus cephalus* (5)
- *Sluanodonta woodiana* (1)
- *Perlucopertes* sp. (2)
- *Trichomanis skrypta* (3)
- *Carassius auratus* (4*)
- *Gambusia* sp. (5)
- *Padgobius nigricans* (6)
- *Scardinius* sp. (7)
- *Alburnus alburnus* (8)
- *Micropterus salmoides* (9*)
- *Procambarus clarkii* (6)
- *Lepomis gibbosus*. (11)
- *Pseudorasbora parva* (12)
- *Silurus glanis* (13)
- *Ictalurus punctatus* (14)
- *Dikerogammarus villosus* (15)
- *Padogobius bonelli (1)*
- *Cyprinus carpio* (4*)
- *Squalus cephalus* (5) (rare)
- *Scardinius* sp. (7) (rare)
- *Alburnus alburnus* (8)

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Why *Ictalurus punctatus*?

Why *Ictalurus punctatus*?

Why *Ictalurus punctatus*?

Materials and Methods

Data	Analysis	Assessment
2016:	• Literature review • stomach content	• impact of this species

Literature Review

- No data for Europe available (few data for Asia)

But: Copp et al. (2009): *I. punctatus* as potential pest for UK
Veer & Nentwig (2015): medium risk score

- Generic Impact Scoring System (GISS-IUCN):

1. Western USA: Major impacts with low uncertainty
2. Europe: Moderate with a high uncertainty

Data collection

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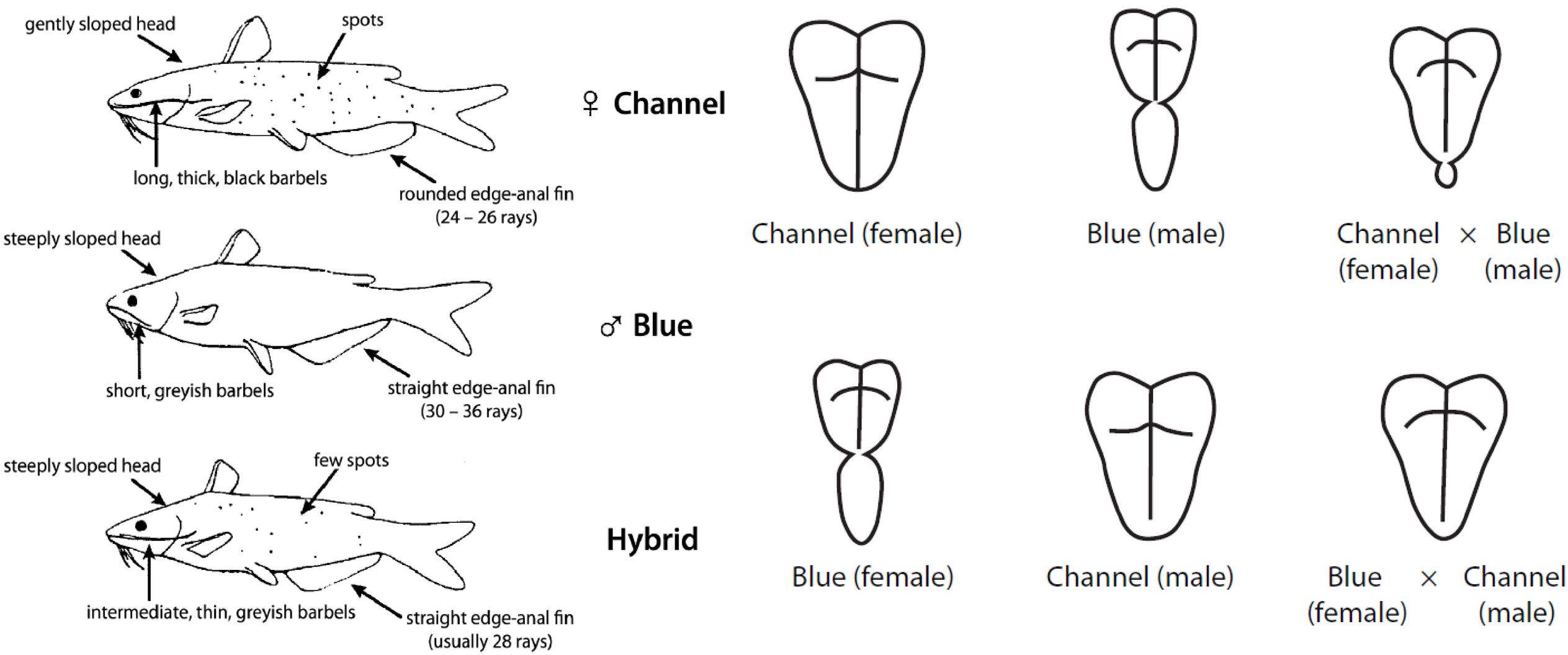
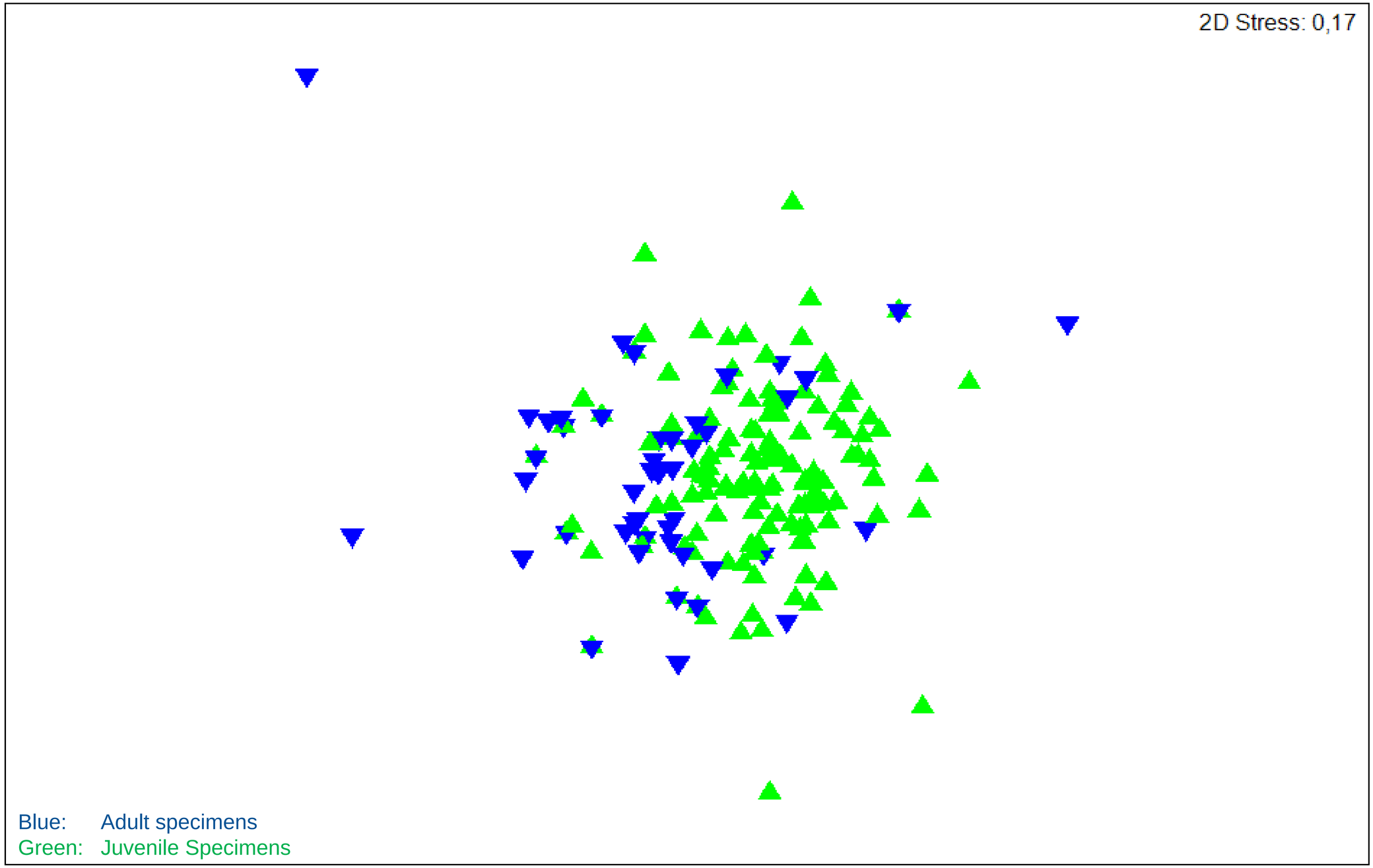
Morphometrics



Results

Stomach content analysis



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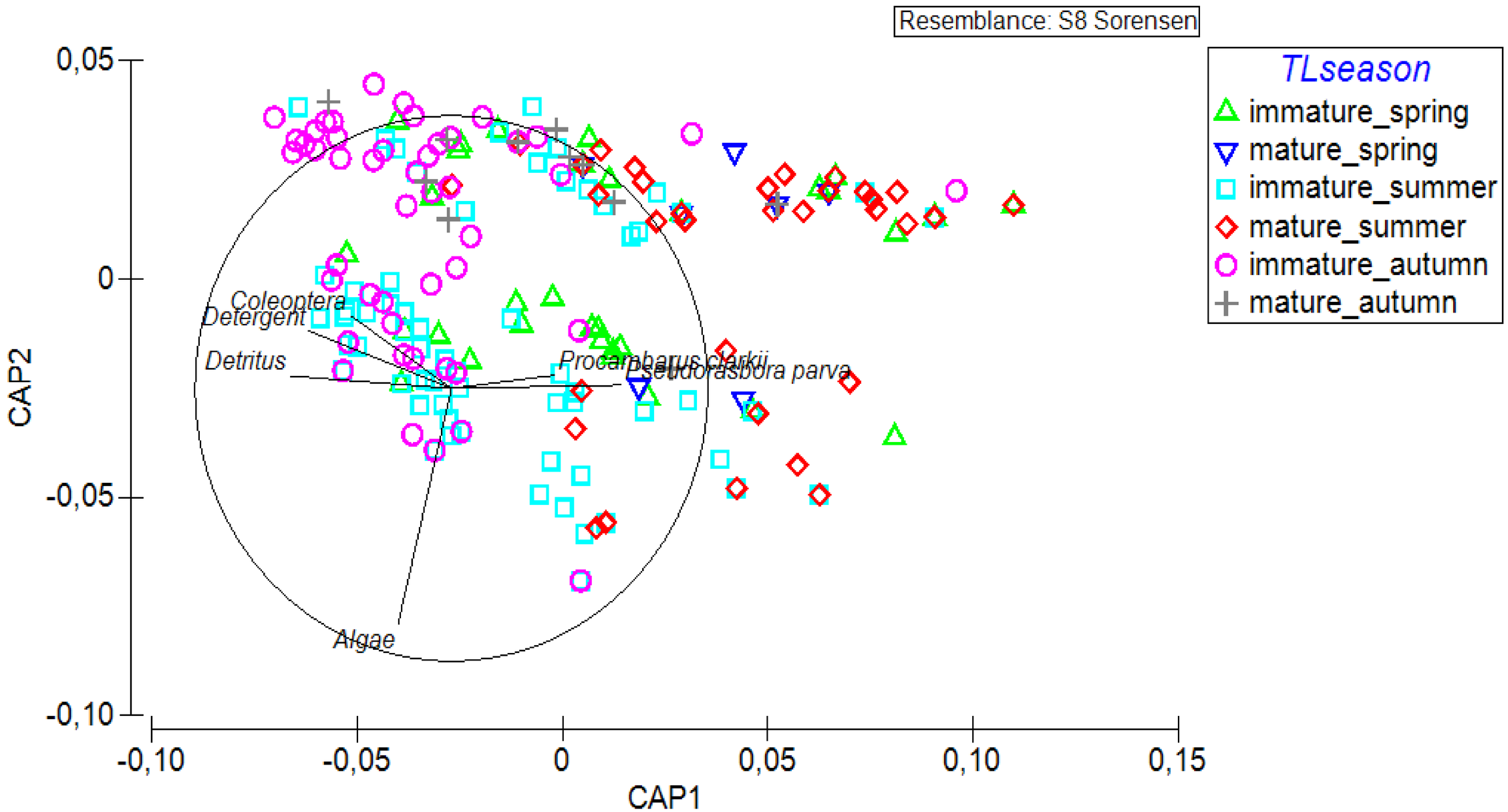
Results

Stomach content analysis



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	Prey	F % juvenile	F % adult	F % overall
Fish	***Pseudorasbora parva***	0.19	**0.36**	0.30
	Fish larvae	0.08	0.07	0.08
	Cyprinus carpio	0.02	0.16	0.06
	Lepomis gibbosus	0.02	0.12	0.05
	Gobidae	0.00	0.01	0.00
Crustacean	***Procambarus clarkii***	0.10	**0.56**	0.18
	Paleomonethes	0.12	0.06	0.10
	Dikerogammarus villosus	0.08	0.03	0.07
Amphibian	Tadpoles	0.01	0.04	0.02
Mollusks	*Radix auricularia*	0.01	0.00	0.00
	Sinanodonta woodiana	0.01	0.00	0.00
Insects	**Coleoptera**	**0.23**	0.07	0.18
	Insect larvae	0.14	0.01	0.10
	Heteroptera	0.11	0.03	0.09
	Diptera	0.07	0.01	0.06
	Hymenoptera	0.06	0.04	0.06
	Odonata	0.03	0.04	0.03
	Dermaptera	0.01	0.01	0.01
	Detritus	**0.67**	**0.18**	0.56
	Algae	**0.58**	**0.14**	0.48
	Phytoplancton and terrestrial plants	**0.33**	0.19	0.29
	Detergent	**0.31**	0.10	0.25
	Plant seeds	0.09	0.03	0.07

Age estimation of specimens and demographic structure of population

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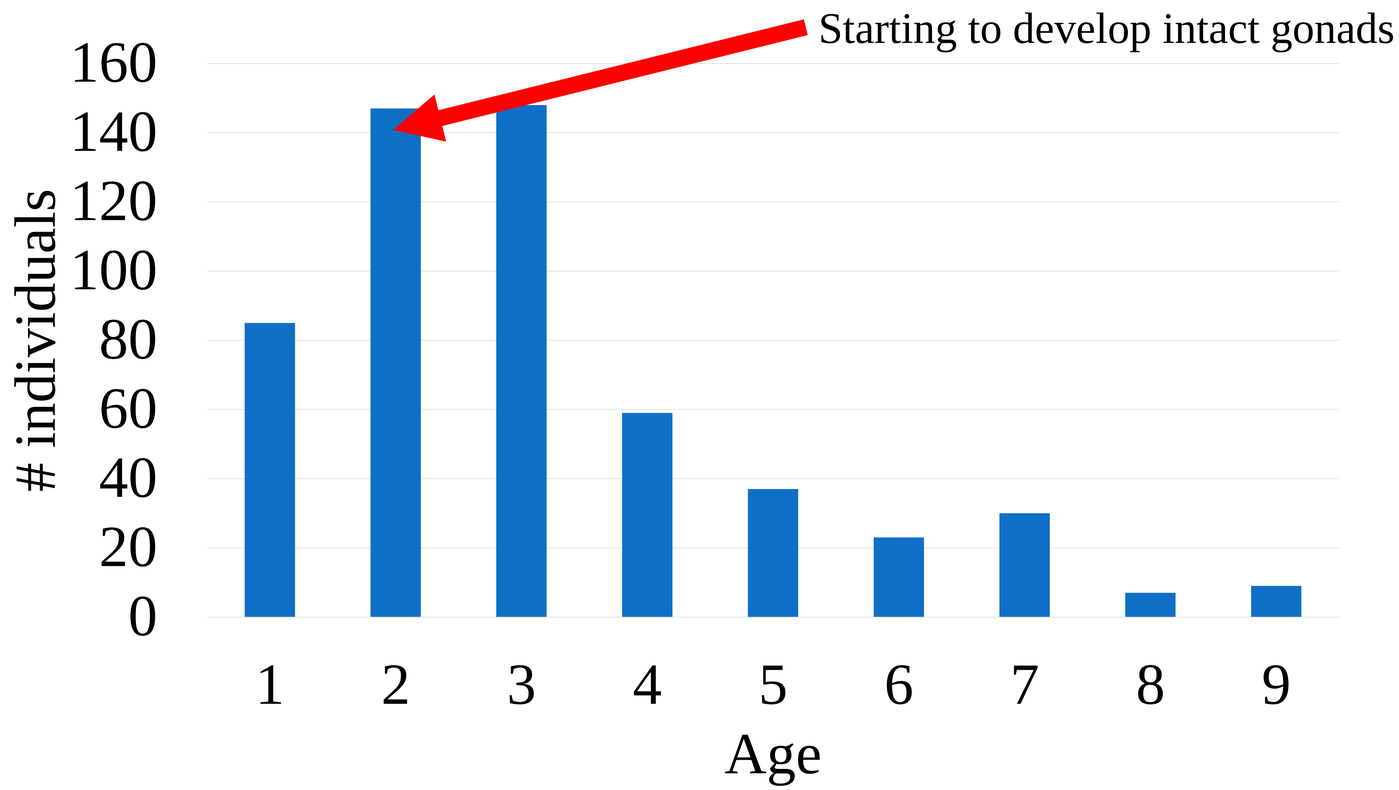
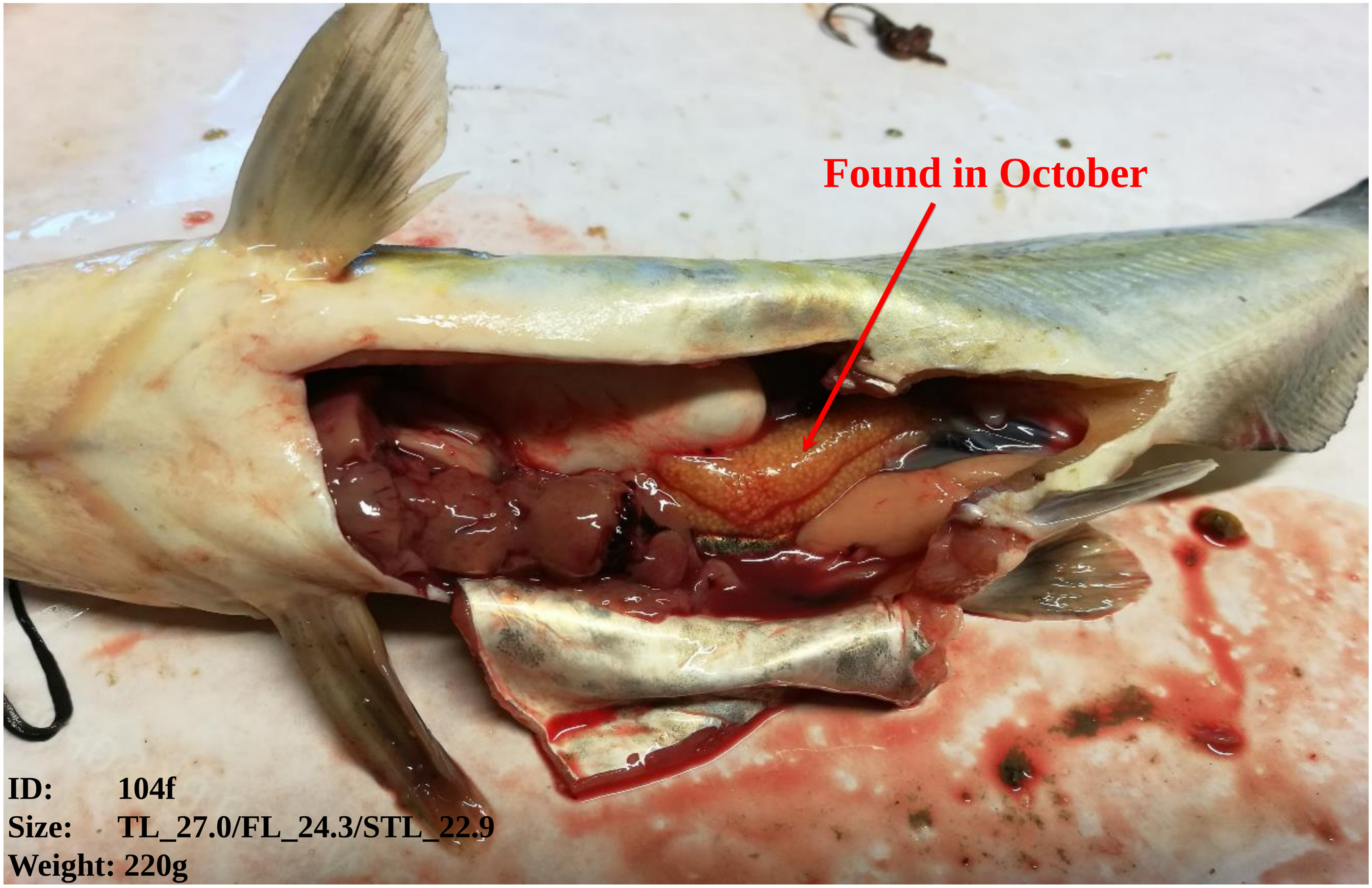
Age distribution



Age	1	2	3	4	5	6	7	8	9
Max Total length [cm]	17,4	25,5	32,2	37,9	41,6	44,8	50,7	53,9	61,4
# individuals	85	147	148	59	37	23	30	7	9

Hall et al 1952

Reproduction times based on found gonads



Stable Isotope analysis
(in combination with stomach contents)

Comparison

Alien Species:

- *Ictalurus punctatus* (juveniles and adults)
- *Silurus glanis* (juveniles and adults)
- *Lepomis gibbosus*
- *Gambusia* sp.
- *Lepomis gibbosus*
- *Pseudorasbora parva*
- *Padogobius bonelli*
- *Cyprinus carpio*
- *Scardinius* sp.
- *Alburnus alburnus*
- *Procambarus clarkii*
- *Dikerogammarus villosus*
- *Sinanodonta woodiana*
- *Potamogeton natans*
- …

Native Species:

- *Squalius cephalus*

Lake Kasumigaura, Japan:

- *Ictalurus punctatus* (adults)
- *Pseudorasbora parva*
- *Procambarus clarkii*

Potential Competition?

Potential Competition?

Trophic web

Acknowledgements

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What next?

- Stable Isotope Analysis

&

- Manuscript preparation

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Thank you

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Attention

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