Ethology of feral ponies in Serra d'Arga, Portugal



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1er Symposium Équitation, langage et cognition

Previous work

Development and behavior of wild immature East Bornean orangutans







Primates and horses: the bridge

The birth of primatology in Japan is linked to the study of wild horses After the World War II, in 1948 the ethologist Kinji Imanishi and his students engaged in the study of feral ponies in Toi-peninsula

"One day, they encountered a troop of wild Japanese monkeys,

and this chance encounter led Imanishi to decide to study wild monkeys. So he went to Koshima island, which was close to the Toi-peninsula. Imanishi and his students **applied their method of individual recognition of horses to the monkeys**, giving a nickname to each monkey" (Matsuzawa and McGrew 2008)



http://metropolisjapan.com/wp-content/uploads/2016/02/cape-toi-bannet-

Primates and horses: the bridge

Japanese were one of the pioneers of modern primatology

Imanishi's focus was to seek the evolutionary origin of human society. Started with the study of Japanese Macaques



macaques

Explore African primates



Imanishi (center) and Itani (left) in search of wild gorillas in Uganda on March 6th 1958. (Photo from Itani Jun'ichiro Archives at PRI, Kyoto University.)

Matsuzawa and McGrew 2008

Primates and horses: the bridge Imanishi and Itani - efforts to start Primate Research Institute, in 1967 Kawai and Kawamura - founder professors, lead the fieldwork on primates

Kano and Sugiyama - continue the field-work in Africa , chimps and bonobos

Field work in African countriesMahale, Bossou, Congo, Uganda

T. Nishida Y. Sugiyama M. Kawai J. Yamagiwa



Photos by T. Matsuzawa

Japanese and Portuguese connection

The Ai project study chimpanzee cognition, **combines field work and laboratory** work aiming to understand the evolution of human mind - Prof. T. Matsuzawa



Bossou chimpanzees



Numerical task, Ayumu



1997: Cláudia Sousa (1974-2014), first Portuguese student went to study primates with Prof. Matsuzawa, in Japan

Japanese and Portuguese connection

Portugal has a long equestrian tradition (Mr. João Rodrigues)

Iberian Peninsula contributed to the development of many other modern European horses and were later introduced and dispersed throughout the Americas

• Tree native horse breeds: Lusitano, Sorraia, Garrano

- Lusitano once developed for war and for bull-fighting
- Today is very important in the world of international equestrian sports

Feral ponies, garranos living in similar setting to ponies living in Toi Peninsula Japan



May 2015: Prof Matsuzawa and I, went to Serra do Gerês to observed feral garranos

October 2015: Prof Matsuzawa and Prof Hirata and Prof Carlos visited Serra d'Arga

Beginning of the collaboration to study feral garranos

2015: first paper published on horse cognition in PRI/Sorbonne by Tomonaga et

Garranos in Gerês National Park, Portugal







MOU - Memorandum of Understanding for Cooperation

Viana do Castelo, May 2016

Kyoto University (WRC and PRI)
Wild life research Center
Primate Research Institute
Paris 3 Sorbonne Nouvelle
Department LEA
City of Viana do Castelo
Associação o Caminho do Garrano



Japanese and Portuguese connection



2016

Horse studies in Japan

Development of Japanese primatology

- •
- •

horses studies

•

Portuguese

Apply the knowledge and methods of primatology to study horse cognition and behavior

Introduction: Garranos

Important role during the war

Half of the XX century: used by farmers for transportation, where others horses could not travel

Small body size, short legs:

• Adapted to live in harsh environments: Mountainous areas with steep slopes

Nowadays, they lost their value not attractive like Lusitanos

Used for tourism and sports, teaching children, exhibitions in traditional fairs

To date, most studies conducted in garranos focus primarily on a veterinary perspective which have a direct applicability to the use of horses by man

Introduction: Garranos

Their diet consists of bushes : tojo, urze, giesta, carqueja, silva... Young leaves and berries of carvalho, vidoerio, medronheiro, azevinho, faia ...



Ulex europaeus

Erica arborea

Quercus robur

Betula pendula

http://floresdoareal.blogspot.fr/2015/02/familia-ericaceae-generosdaboecia.html

Gonçalves et al 2009

Introduction: Garranos' major threats

Classified as an endangered species, by EU Iberian wolf (*Canis lupus signatus*) Human activities



e.g. capture fairs consumptior Car accidents

Annual fires



Study site: Serra d'Arga

Montaria Serra d'Arga, Viana do Castelo





Study site: Serra d'Arga

• View from the school

• Sunny day



• Cloudy day



Study site: Serra d'Arga







Study periods

February - March 2016 : ID, collect basic data
 May-June 2016 : ID, collect basic data, master stud
 October 2016: ID, collect basic data, master studen

Future plansCover birth season (May to August 2017)





Team in the field

Dr. Satoshi Hirata (Professor, Kyoto University)
 Dr. Shinya Yamamoto (Associate professor, Kobe University)
 Dr. Monamie Ringhofer (Pos-doc, Kobe University)
 Renata Mendonça (PhD candidate, Kyoto University)
 Sota Inoue (Master Student, Kyoto University)



Topics covered

Female reproductive ecology, development and mother-foal relationships

> Behavioral synchrony, social learning, division of labor

 \succ Position of individuals in the group, social network

Inter-group relationships

Site management
Communication with villagers
Identification of individuals

Methods

Non-invasive Data collection by focal and scan sampling + Ad libitum nethods 20 min focal + 1 hour group Mark position/bones found with GPS Video recording (2 sony handycam) **Drone** to study horse position and group decision making during movement Experiments to determine social hierarchy **Collection of fecal samples** for DNA and hormonal analysis GPS collaring to study group movement and ranging area

Methods



View of the drone Photo by Inuoe



DJI Phantom 3

Methods

Hand camera







How to Identify?

Coloration chart

Body marks chart





Subject ID

Give name of Japanese prefectures • E.g. Kyoto, Tokyo, Osaka group

Create an ID book

Around 160 individuals identified44 foals27 groups



Groups:

27 groups

Group composition

- 1 male, multiple females (harem)
- 2 male groups
- Bachelor groups (all male groups)

Group size varies from 2 to 14 individua



Shimane group



	Group	Males	Young males	foals	females	Total
1	Tokyo	1	0	4	13	14
2	Ibaragi	1	1	4	8	10
3	Aichi	1	1	1	7	9
4	Toshigi	1	0	3	8	9
5	Kyoto	1	0	2	7	8
6	Shizuoka	1	1	4	6	8
7	Nagazaki	1	0	2	6	7
8	Totori	1	0	2	6	7
9	Okayama	1	0	2	5	6
10	Shiga	1	0	2	5	6
11	Wakayama	1	0	2	5	6
12	Hyogo	1	0	1	4	5
13	Ishikawa	1	1	2	3	5
14	Kagawa	1	0	3	4	5
15	Nara	1	0	0	4	5
16	Toyama	1	0	1	3	4
17	Mie	1	0	1	2	3
18	Shimane	1	0	1	1	2
19	Hiroshima	2	0	0	0	2
20	Fukuoka	2	0	4	4	6
21	Kanagawa	2	0	3	4	6
22	Osaka	2	0	1	3	5
23	Niigata	2	0	0	3	5
24	Gifu	2	0	0	2	4
25	Nagano	5	0	0	0	5
26	All male group	10?	0	0	0	10?
	Total	35	4	45	113	162?

Social behaviors

Male-male greeting

Mating

Grooming



Death by predation



- Collected bones
- Identified age and sex of the prey, by the teeth
- Problem: Human activity as a confound factor

Death giving birth

Female was found dead, giving birth (?)





Injured individuals

- Injured male traveling with the bachelor group
- Left hinder leg
- Run with 3 legs
- Cooperation? Protection from predation!





Aims

Study the natural behavior of this endangered Portuguese breed (using primatology methods)

Better knowledge of the social behavior and cognition of garranos

Ecological importance of the breed (vs veterinarian perspective)
 Compare to other ponies' species (e.g. Japanese ponies - no predation)

How ecological factors modulated the evolution of different species/breeds of horses

To promote the name of the breed and work towards their conservation and law enforcement in Portugal, working with local government

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