

SCIENTIFIC SEMINAR *"Managing large-carnivores in a crowded Europe"* CIBIO, Campus Agrário de Vairão, 3 November 2016



Transboundary wolf monitoring in the Alps: the Wolf Alpine Group (WAG)



Francesca Marucco

Scientific Coordinator – Project Manager Progetto Life Wolfalps Centro Grandi Carnivori, Parco Naturale Alpi Marittime



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The trans-boundary wolf population in the Alps



The past decline



The recent wolf recolonization process





The natural wolf recolonization over the Alps

Italy

Swiss

Natural wolf expansion from the Dinaric population in the Eastern Alps

Austria

France

Natural wolf expansion from the Appennine population in the Western Alps









The story of wolf "Slavc"

Info from: Progetto LIFE Slowolf 2010-2014

Source: http://www.volkovi.si

Bolzano

Verona

25

12.5

50

75

ITALIJA

Benetke

KM

100

Celovec

HRVAŠKA

Ljubljana

SLOVENIJA



CHALLENGES FOR MONITORING AND MANAGEMENT IMPLICATION IN A TRANSBOUNDARY CONTEXT

The WAG: The WAG has to be considered a independent scientific group INTERESTED IN THE MONITORING OF THE WOLF ALPINE POPULATION, which can address specific scientific requests from different platforms dealing with large carnivore management.

WAG Corresponding people by country: C. Duchamp (ONCFS, France), F.
 Marucco (Centro Grandi Carnivori, Regione Piemonte - PAM, Italy), R. Manz
 (KORA, Switzerland), Manfred Wölfl (LFU, Germany), Georg Rauer (Vetmeduni Wien, Austria), Hubert Potočnik (Univ.Ljubljana – Slovenia).

HOW THE WAG HAS STARTED?

WAG: process & products

Process: regular-meetings to identify « goals » and products in monitoring the species

- 2001: 1st meeting Briancon (France)
- 2003: 2nd Boudevilliers (Swiss) / report
- 2004: 3rd Entracque (Italy) / report
- 2005: 4th St Martin (France) /WAG MAP 2004
- 2007: 5th La Fouly (Swiss) / report
- 2010: 6th Entracque (Italy) / WAG MAP 2009 + report
- 2013: 7th Jausiers (France) / WAG MAP 2012 + report
- 2015: 8th Bormio (Italy) / WAG MAP 2015 + Genetic report

Product: Document the natural wolf recolonization of the Western Alps

Fabbri et al. 2007. Molecular Ecology 16:1661-1671.

8-16 effective founders explained the genetic

diversity observed in the Alps and gene flow between the Apennines and the Alps was moderate (corresponding to 1.25-2.50 wolves per generation)

Fig. 1 Approximate wolf (Canis lupus) distribution range in Italy

Transboundary packs highlighted by cross validation in genetic analysis between FR and IT

(see QDN letter N°22 – example of year 2006)

First Management Transboundary approach

Ministero dell'Ambiente e della Futela del Ferriterio parzone consistente l'antorizzone pell'antorizzone	Schweizerische Eidgenossenschaft Confederation Suisse Confederation Svitzera Confederation Svitzera Confederation Svitzera Confederation Svitzera Confederation Svitzera Confederation Svitzera Confederation Svitzera
Protocollo di collaborazione ita Protocole de collaboration itale	alo-franco-svizzera per la gestione del lupo nelle Alpi o-franco-suisse pour la gestion du loup dans les Alpes
Premesso che:	Considérant que:
 La Raccomandazione del Comitato pe della Convenzione di Berna n. 82 d. richiamando la Raccomandazione n 1999, raccomanda alle Pari contr serie di azioni specifiche per la cons dei grandi camivori, tra cui, speci rivolte a Francia, Italia e Svizzera (L Alpi occidentali) le seguenti: 	rmanente - La Recommandation du comité permanent de la Convention de Berne n° 82 de 2000, se référant à la Recommandation n° 74 de 1999, demande aux Parties contractantes de prendre des mesures spècifiques pour la conservation des grands carnivores, et que, parmi celles-ci, les mesures suivantes concernent spècifiquement la France, l'Italie et la Suisse (loup dans les Alpes occidentales):
popolazione del lupo alpino co entità geograficamente distinta; o collaborare per una gestione u della popolazione di lupo alpino, s adeguate strutture e contatti politici; o favorire il mantenimento della po di lupo alpino in un buono conservazione nel quadro di uno sostenibile delle aree rurali:	una la population de loups alpins comme une entité distincte; congiunta collaborer en vue d'une gestion conjointe de la population de loups alpins en tecnici e ocoltaborer su vue d'une gestion conjointe de la population de loups alpins en etablisant des structures adéquates et des contacts techniques et politiques; polazione favoriser le maintien de la population de stato di s sviluppo conservation, dans le cadre du dévelopement durable des zones rurales.
 Nel corso della sua 24a sessione, ti Strasburgo dal 30 novembre al 4 2004, il Comitato permanente Convenzione di Berna ha deciso, in ri alla richiesta della Svizzera di declassi (Canis lugus) dall'allegato II all'allegat Convenzione, di "rinviare la discussi proposta svizzera a un prossimo inco preparare il rapporto summer approvando tra l'altro la proposta dell'UE di condurre uno studio scienti 	enutasi a • Au cours de sa 24 ^e session qui a eu lieu à dicembre e della lérimento Berne a convenu – en se réferant à la demande de la Suisse de déclasser le loup (<i>Canis lupus</i>) o III della de l'Ancexe II à l'Ancexe III de la Convention – de "renvoyer la discussion sur la proposition notro e di suisse à une rencontre ultréineure et de préparer le rapport susmentionné" approuvant entre dei Paesi autres la proposition des pays de IVLE de mener une étude scientifique sur les della des et la discussion de sur les autres la convolution des convulations
dimensioni e sulla distribuzion popolazioni europee di lupo nonc minacce a cui sono esposte.	sulle européennes de loups ainsi que sur les menaces qui pèsent sur elles.

First Management Transboundary approach

First report to the Permanent Committee :

Wolves in the western Alps :

Monitoring and Conservation Status

Assessing the conservation status of wolves in the western Alps

transboundary; breeding ..etc.)

MONITORING SAMPLING DESIGN

OVERALL APPROACH

 Extensive sign surveys at landscape scale to detect new wolf occurrence by a Network of trained wolf experts spatially dispatched

- Intensive sign survey to monitor each pack detected
- Molecular tracking

SPECIFIC APPROACH and OBJECTIVES by Country/Region + yearly modifications and improvements

See N°23 : special issue

Standardizing Molecular tracking: MEETING in Losanna 2008

- Organizing Genetic Lab collaborations
 - Same µsat loci (n=7)
 - Same Lab procedure
- Standardized nomenclature

FRANCE: LECA lab (Grenoble, FR) ITALY: USFS-RMRS Carnivore Genetic lab (Missoula, USA) SWISS: Lab for Conservation Biology (Lozanne, CH) NEW LABS: University of Lubjana, ISPRA, Lab. In Germany Genotyping of reference samples

Advance in this work

Unil

UNIL | Université de Lausanne Laboratoire de Biologie de la Conservation bâtiment Biophore bureau 3123.1 CH-1015 Lausanne

Standardisation of the genetic analyses (microsatellite genotyping) among the different laboratories involved in the Wolf Alpine Project

Dr Luca Fumagalli

Department of Ecology and Evolution Laboratory for Conservation Biology Biophore Building, University of Lausanne CH-1015 Lausanne (Switzerland)

© L. Fumagalli

WAG MAP + REPORT 2009

WOLF POPULATION STAT TREN

Author: Wolf Alpine Group (WAG) Published LCIE Web site http://www.lcie.org. Fd WAG Corresponding people by county: C. D Piemonte - PAM, Italy), M. von Arx (KORA, Swi Citation suggestion: Wolf Alpine Group (2011): V <u>http://www.lcie.org</u> 2012 February.

Introduction

Wolves are naturally recolonizing the Valiere et al. 2003) through dispersal 2007). A moderate bottleneck occurre the Apennines and the Alps was mode (Fabbri et al. 2007). Bottleneck sin explained the genetic diversity observ genetic diversity in the current expand migrants from the Apennines, as we Carpathian wolf population (Rauer an Following the Guidelines for Populati population in the Alps has been ident Although it is connected demographi Apennines (Fabbri et al. 2007), the Al contexts (Linnell et al. 2007) that can Because they live at low density ov beyond administrative borders, incr between countries to actually monitor The information provided in this repo work of the Wolf Alpine Group, wl management institutions of Italy, Fra monitoring in the Alpine area. The Grandi Carnivori - Regione Piemont Office National de la Chasse et de Switzerland, from Bavarian Environn Wien for Austria.

Methods

Similar monitoring techniques are a surveys, snow-tracking sessions in wi standardized non-invasive molecula monitoring protocol is applied in Fran We identified the "wolf pack" as the distribution, such as in other wolf poj

State boundary (© EuroGeographics) Wolf population structure

Pair

Single

Apine range
Wolf occurence (LCIE 2012)

Regular presence

Sporadic presence

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> 0 25 50 100 Km March 2014 Wolf Alpine Group

LIFE12 NAT IT 000807 LIFE WOLFALPS

"Wolf in the alps: implementation of coordinated wolf conservation actions in core areas and beyond"

1. Coordinated Wolf monitoring strategy (IT-SLO) 2. Personnel training and Wolf Network 3. Preliminary results

Progetto LIFE 12 NAT/IT/000807 WOLFALPS Wolf in the Alos: implementation of coordinated wolf conservation actions in core areas and beyond Azione A2

STRATEGIA, CRITERI E METODI PER IL MONITORAGGIO DELLO STATO DI CONSERVAZIONE DELLA POPOLAZIONE DI LUPO SULLE ALPI ITALIANE

A cura di Francesca Marucco

(Centro Conservazione e Gestione Grandi Carnivori, Parco Naturale Alpi Marittime) Con il contributo e la sottoscrizione di: Corpo Forestale dello Stato – Livia Mattei, Giancarlo Papitto Ente Gestione Aree protette dell'Ossola – Radames Bionda Ente Gestione Aree protette delle Alpi Cozie - Elisa Ramassa, Elisa Avanzinelli Istituto di Ecologia Applicata – Valeria Salvatori Museo delle Scienze MuSe – Paolo Pedrini, Natalia Bragalanti Parco Naturale Alpi Marittime - Laura Martinelli, Giuseppe Canavese Parco Naturale del Marguareis – Davide Sigaudo Parco Nazionale della Val Grande – Cristina Movalli Parco Nazionale dello Stelvio – Luca Pedrotti, Davide Righetti Parco Nazionale del Gran Paradiso – Bruno Bassano Provincia autonoma di Bolzano - Andreas Agreiter, Martin Stadler, Davide Righett Provincia autonoma di Trento - Claudio Groff Regione autonoma Friuli Venezia Giulia – Umberto Fattori Regione autonoma Valle d'Aosta - Paolo Oreiller Regione Lombardia – Elena Tironi Regione Piemonte - Elisa Malenotti

Regione Veneto – Sonia Calderola Università "la Sanienza" di Roma – Luigi Boitani Università di Ljubljana - Hubert Potocnik, Tomaz Skrbinsek

Giugno 2014

Sampling GRID

Tarvisio

SWITZERLAND

Strategy, Criteria, and Methods for the monitoring of the wolf population status in the Italian Alps:

- Sampling strategy for the Italian Alps
- Monitoring standards for Italy and Slovenia, in the framework of the WAG and LCIE
- Protocols of sampling
- WOLF WEBGIS PORTAL

NCE

Legend

LIFE12 NAI/II/000807

Coordinated Wolf monitoring strategy Personnel training (Courses) and Wolf Network Preliminary results

Progetto LIFE+ WOLFALPS - Azione A3 -

403 trained personnel from 37 Bodies distributed and coordinated over the Italian Alpine range

Wednesday 28th October 2015 - Visitor Centre of Stelvio N.P. - Valfurva, Bormio, Italy

WOLF MONITORING OVER THE ALPS

- TOWARDS A UNIQUE GENETIC APPROACH -

8th Wolf Alpine Group Workshop in Bormio, Italy

Summary of the Genetic Workshop

By M. Schwartz

The Wolf Alpine Group brought together geneticists from multiple countries to discuss the latest findings related to alpine wolf populations and to examine the newest developments in genetics and genomics that can be applied to developing a better understanding of wolves. The dominant uses of molecular genetics in wolf management currently are to identify unique genotypes (e.g., unique individuals) from non-invasive samples (e.g., scat and hair), to describe introgression of dogs and wolves, and to quantify migration from one region or population into another. Each research group has been attacking these issues independently, with cooperation facilitated by the Wolf Alpine Group. This meeting provided the ideal opportunity to discuss how new genomic tools can address each of the issues.

1

Final agreements among genetic labs

- keep communicating about the new technologies
- exchanging samples of previously genotyped individuals
- continue to exchange microsats genotypes, based on the already standardized genotyping approach
- test the new high throughput sequencer (HTS)-genotyping method.

Dr. Taberlet was amenable to scientists from the various research groups visiting his laboratory once the HTS-genotyping method was completed to be trained in the technique

TRANS-BOUNDARY MANAGEMENT

ITALIAN-SWISS-FRANCE SIGNED PROTOCOL IN 2007

WISO PLATFORM – ALPINE CONVENTION

CONCLUSION

- To monitor the wolf population in the Alps as a unique population over the boundaries is needed:
- A long term technical-scientific collaboration among groups and countries
- Continuous adaptation of techniques
- Pack number and distribution will be monitored, but to evaluate the FCS specific research at the population level is needed.

 It is crucial to set up a GO official framework to MANAGE the wolf alpine population as a whole, however this likely requires a even longer process

www.lifewolfalps.eu

