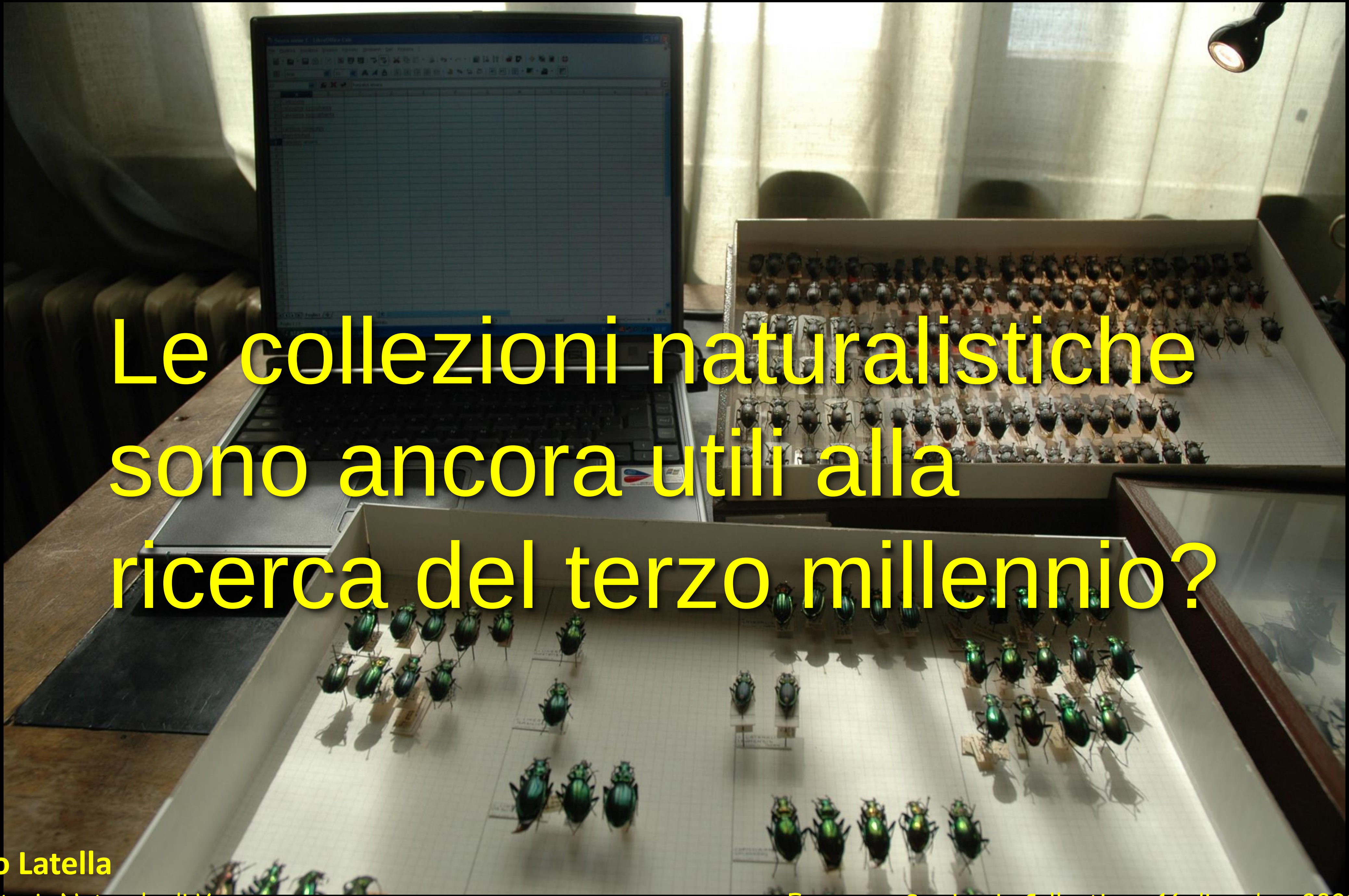


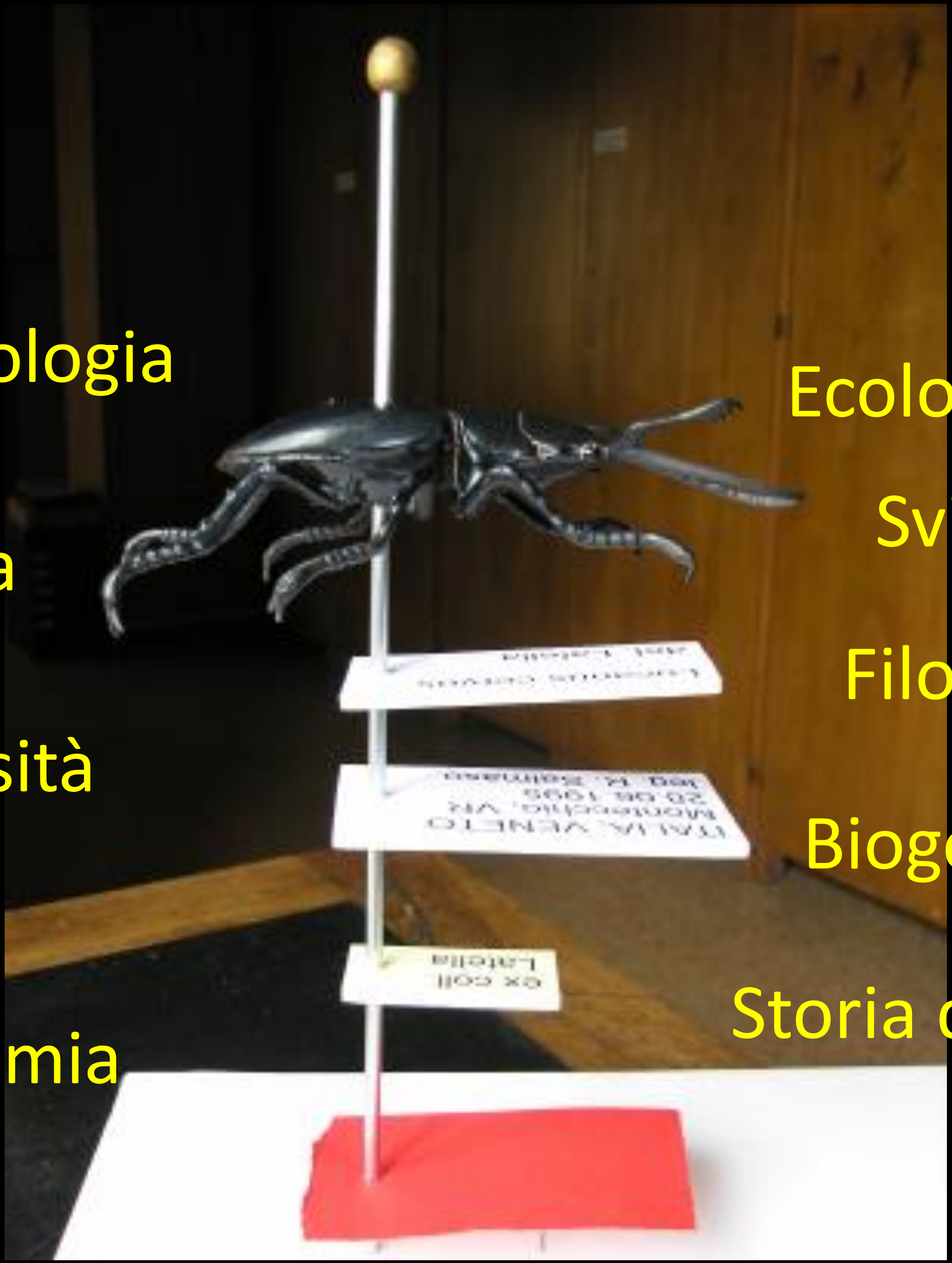
Le collezioni naturalistiche sono ancora utili alla ricerca del terzo millennio?

Leonardo Latella

Museo di Storia Naturale di Verona

Ferrara, Seminario Collections, 16 dicembre 2021

Le collezioni naturalistiche sono raccolte sistematizzate (identificate, classificate e ordinate) di materiale biologico o di dati ad esso correlati.
La maggior parte di queste raccolte sono depositate in musei di storia naturale o scientifici, ma anche in università, centri di ricerca o anche totalmente, in collezioni private o in banche dati online.



Morfologia

Ecologia

Genetica

Sviluppo

Filogenesi

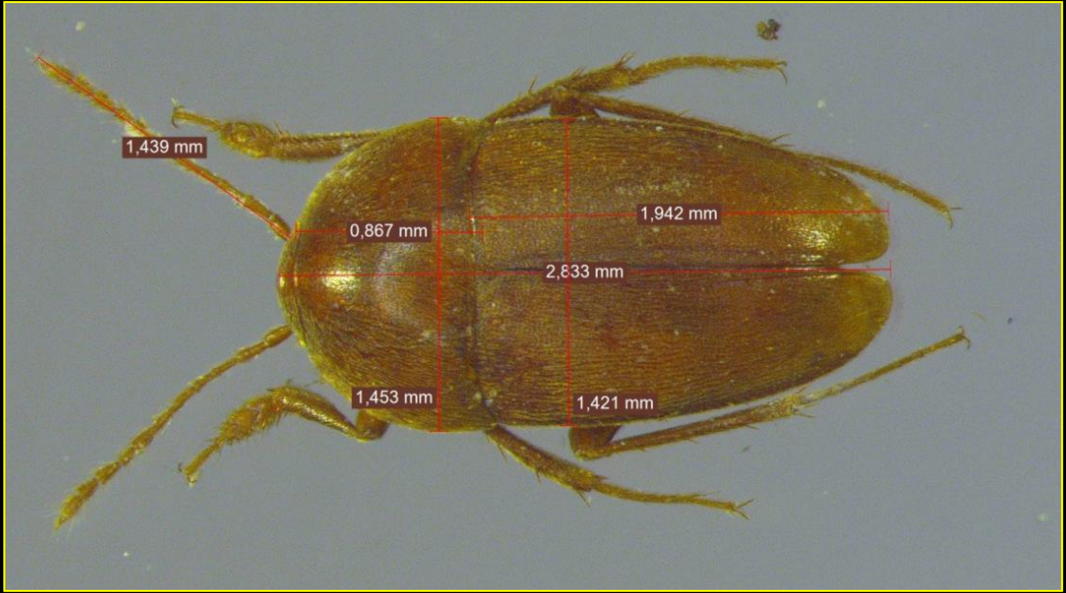
Biodiversità

Biogeografia

Storia della scienza

Tassonomia

Approcci “Classici” alle collezioni



Studi morfologici

sistematica

biologia dello sviluppo

…

Data mining

utilizzo dei dati estratti dal/i cartellino/i

ricerca di pattern in ampi data set

…

Agricoltura

Salute pubblica

Biodiversità

Modelli di distribuzione

Conservazione

Monitoraggio ambientale

Descrizione di nuove specie

Raccolta dati biologici

Paesaggio e cambiamento climatico

Mostre ed esposizioni permanenti

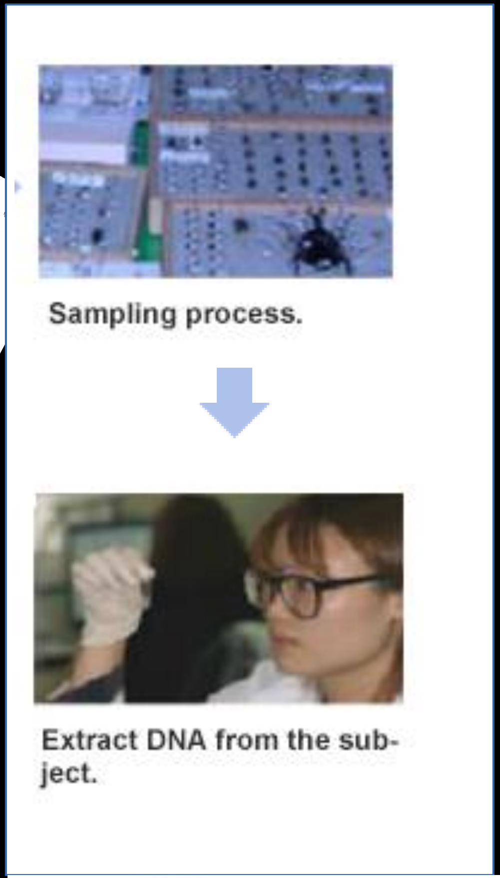
…

Grazie alle moderne tecniche informatiche e alla diffusione di internet, i dati di molte collezioni sono inseriti in dataset condivisi e spesso compresi in progetti transnazionali o sono state create vere e proprie «collezioni di informazioni biologiche» (GeneBank, BOLD System, Protein Data Bank)

Specific Enzymatic Amplification of DNA In Vitro: The Polymerase Chain Reaction

K. MULLIS, F. FALOONA, S. SCHARF, R. SAIKI, G. HORN, AND H. ERLICH
Cetus Corporation, Department of Human Genetics, Emeryville, California 94608

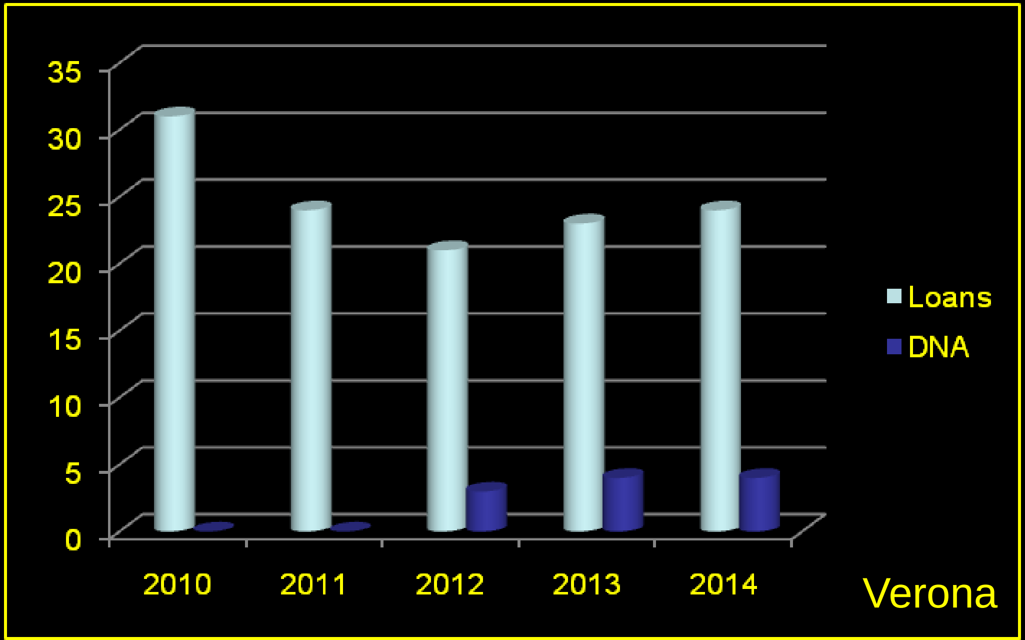
Cold Spring Harbor Symposia on Quantitative Biology, Volume LI. © 1986 Cold Spring Harbor Laboratory 0-87969-052-6/86 $1.00

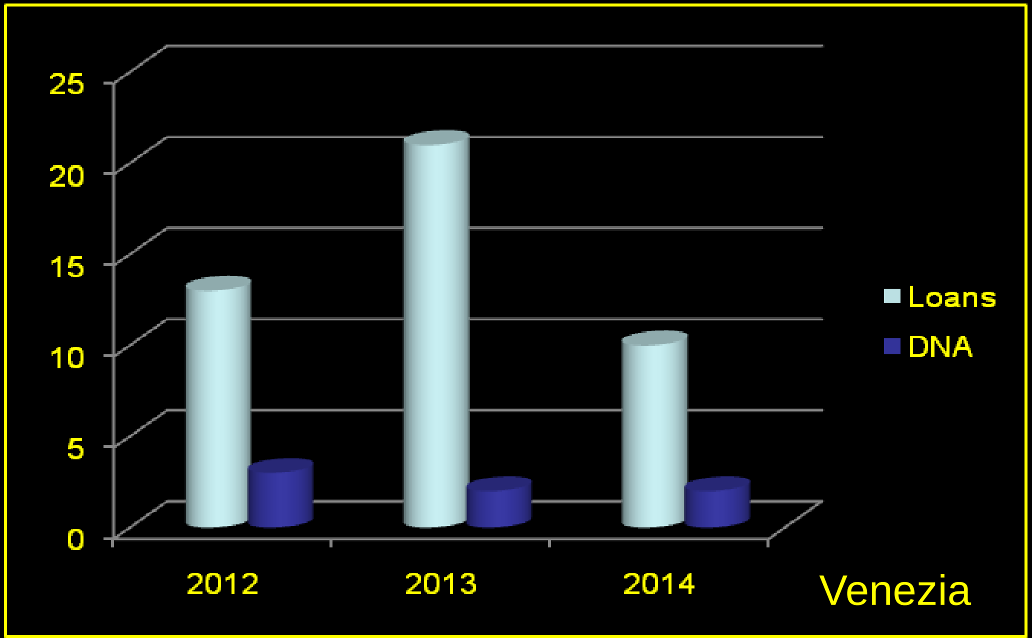


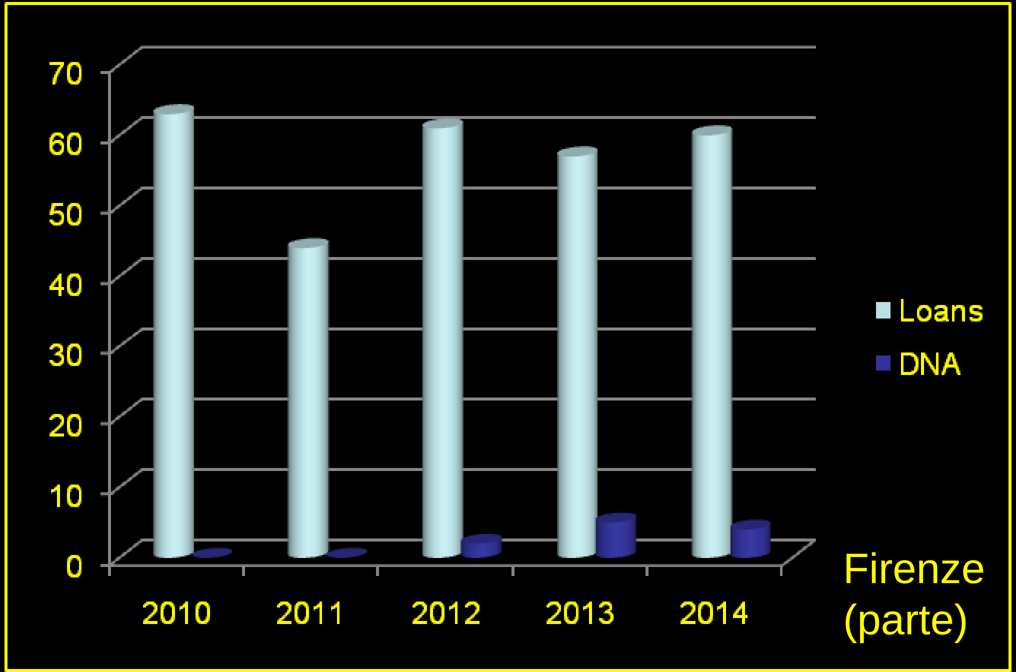

STATEBOURNE
biosystem

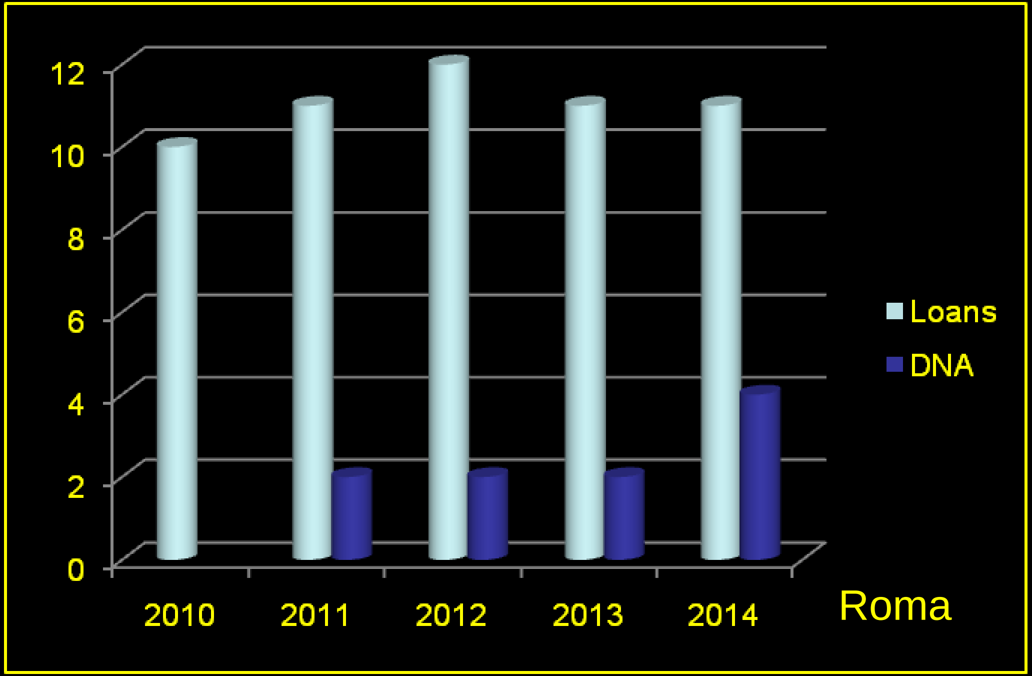

New Brunswick
ULTRA LOW TEMPERATURE FREEZER
VWR
U570

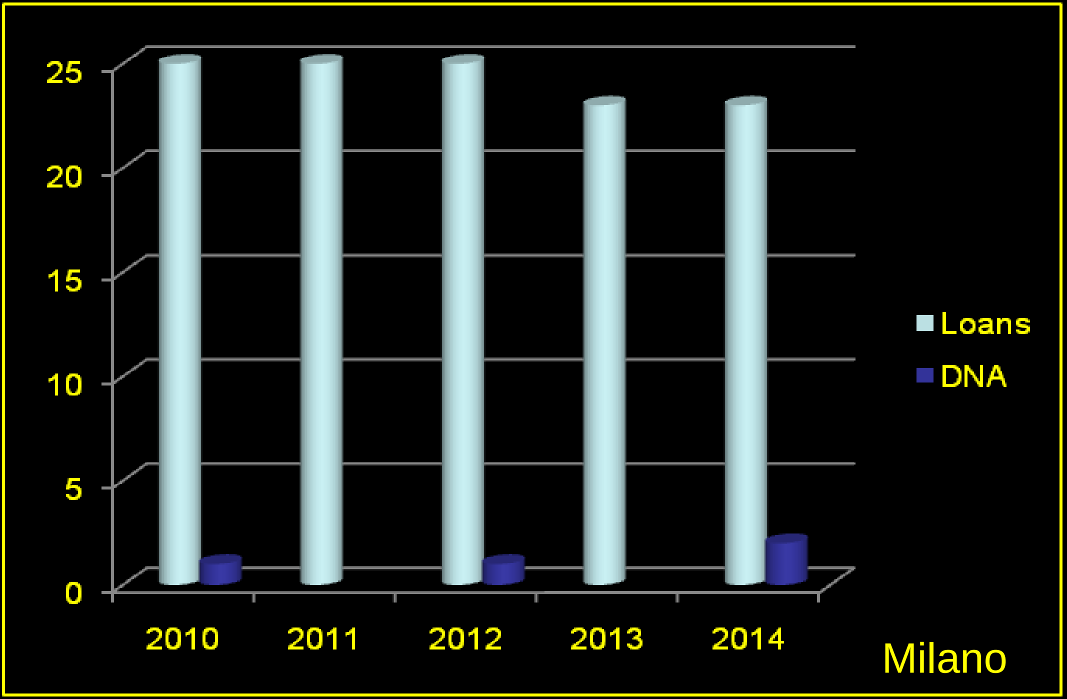

ARACHNIDA
MISCELLANEA


35
30
25
20
15
10
5
0
2010
2011
2012
2013
2014
Loans
DNA
Verona

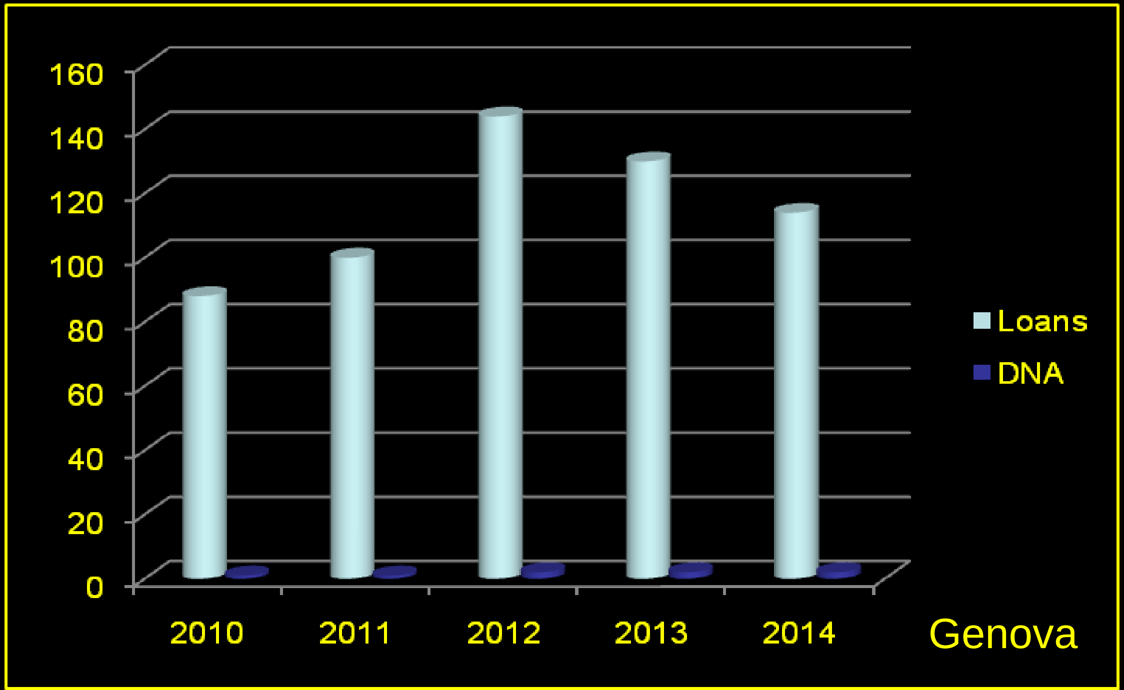

25
20
15
10
5
0
2012
2013
2014
Loans
DNA
Venezia


70
60
50
40
30
20
10
0
2010
2011
2012
2013
2014
Loans
DNA
Firenze (parte)

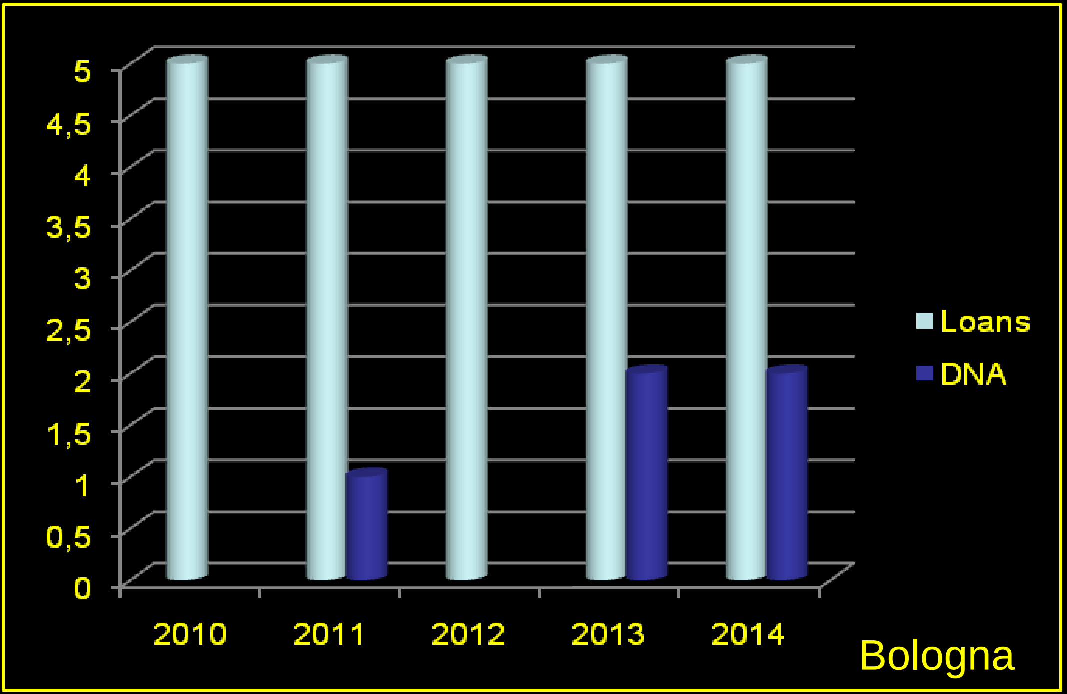

12
10
8
6
4
2
0
2010
2011
2012
2013
2014
Loans
DNA
Roma



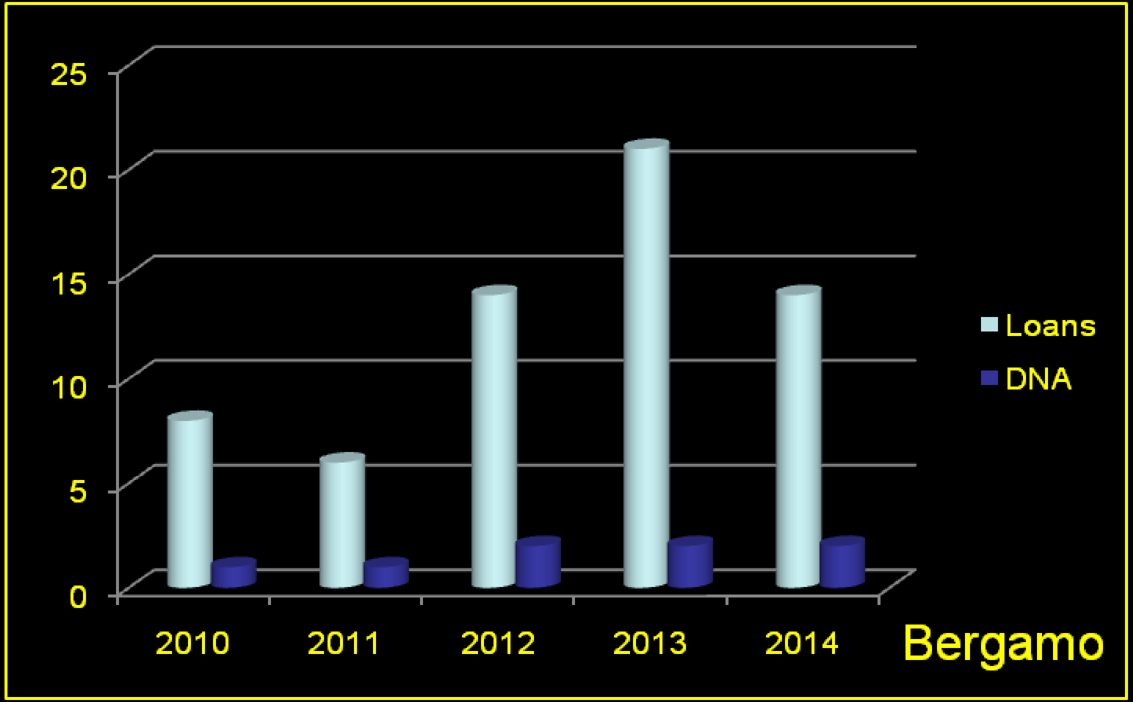
25
20
15
10
5
0
2010
2011
2012
2013
2014
Loans
DNA
Milano



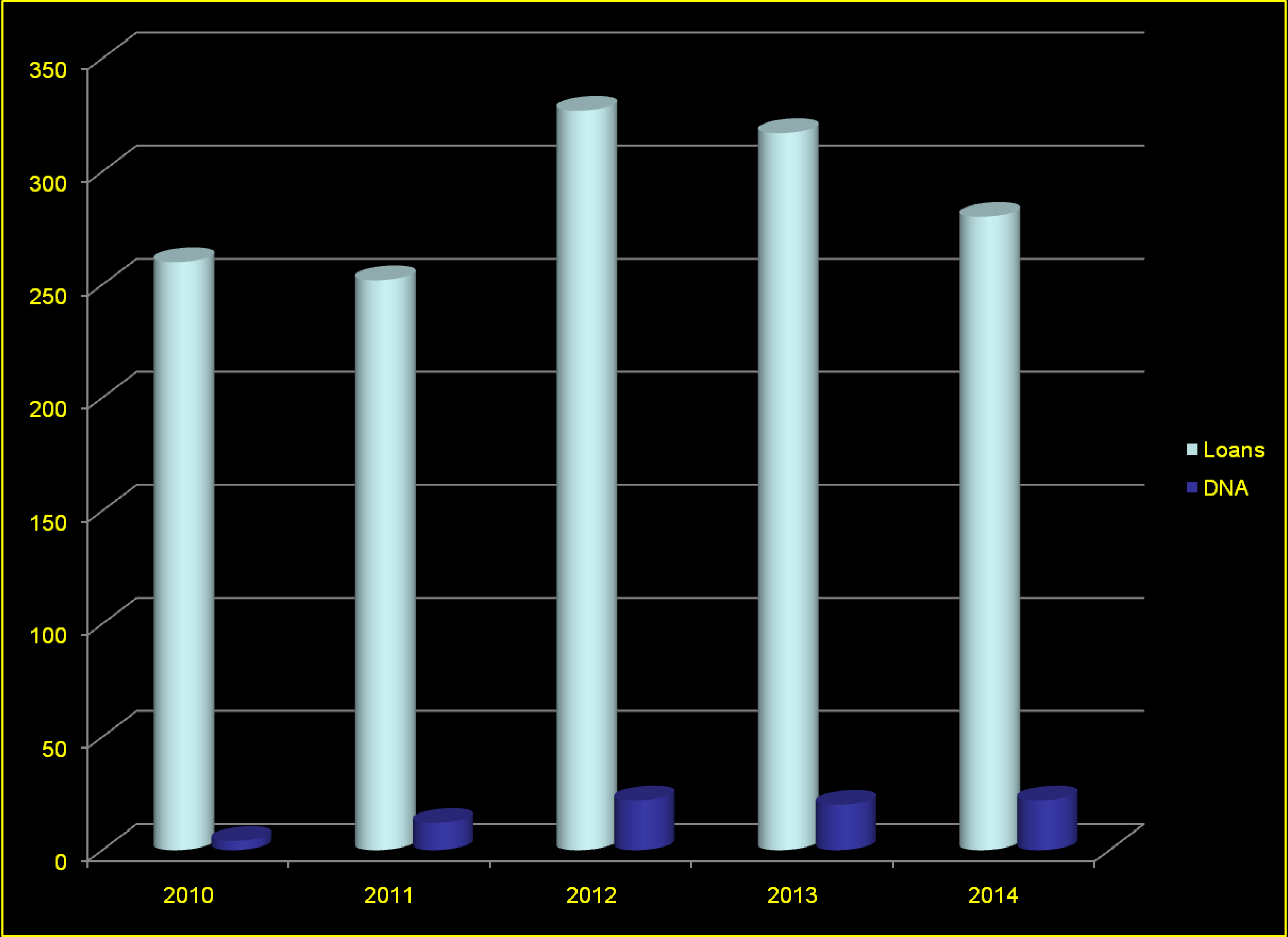
160
140
120
100
80
60
40
20
0
2010
2011
2012
2013
2014
Loans
DNA
Genova



5
4,5
4
3,5
3
2,5
2
1,5
1
0,5
0
2010
2011
2012
2013
2014
Loans
DNA
Bologna

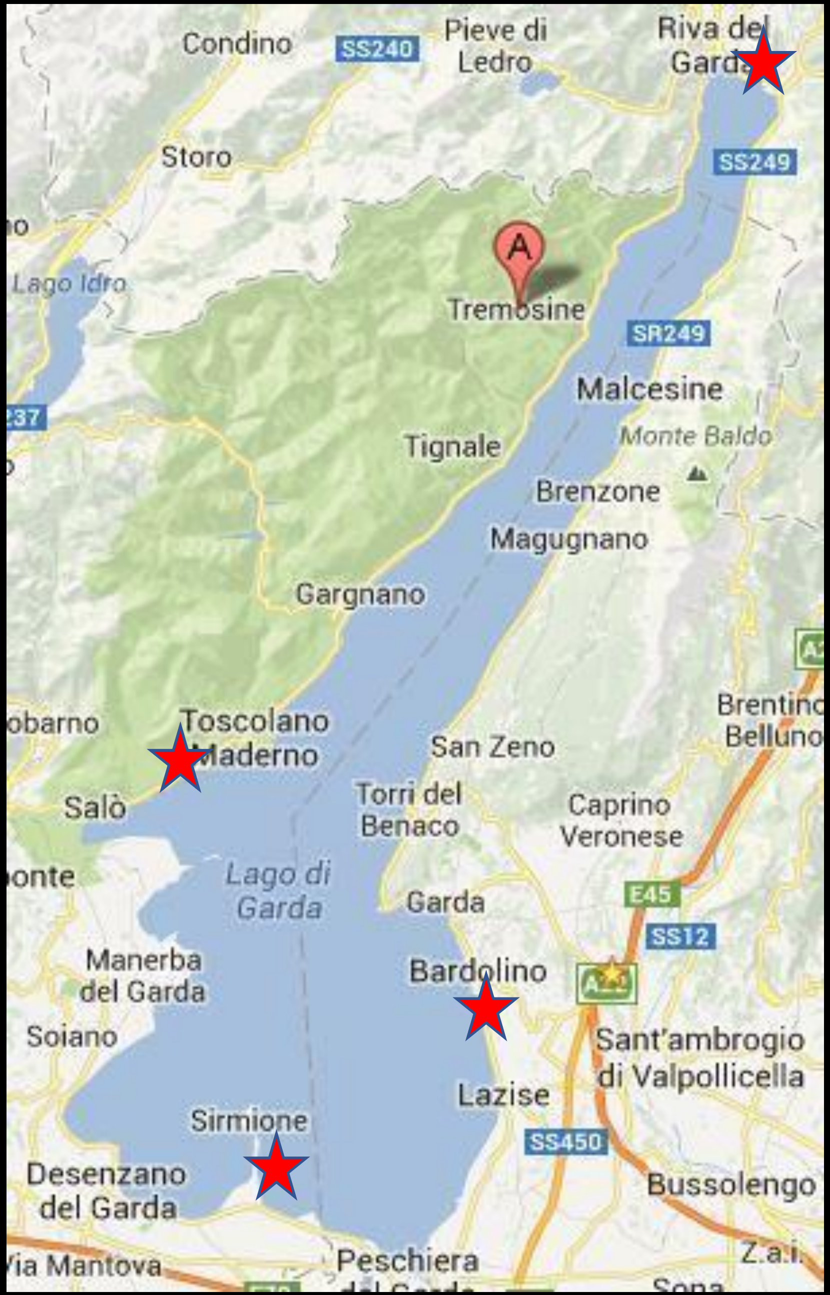


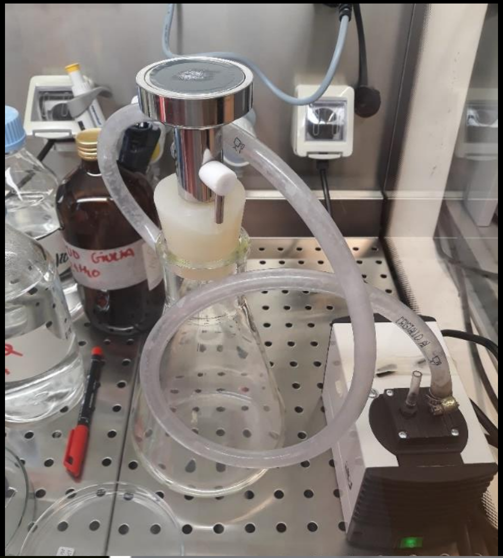
25
20
15
10
5
0
2010
2011
2012
2013
2014
Loans
DNA
Bergamo

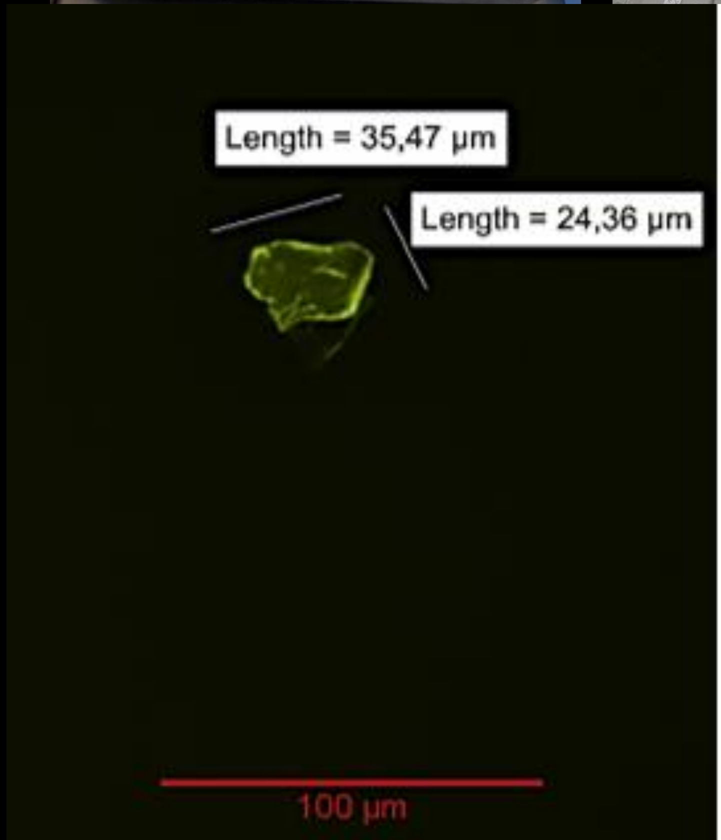

350
300
250
200
150
100
50
0
2010
2011
2012
2013
2014
Loans
DNA

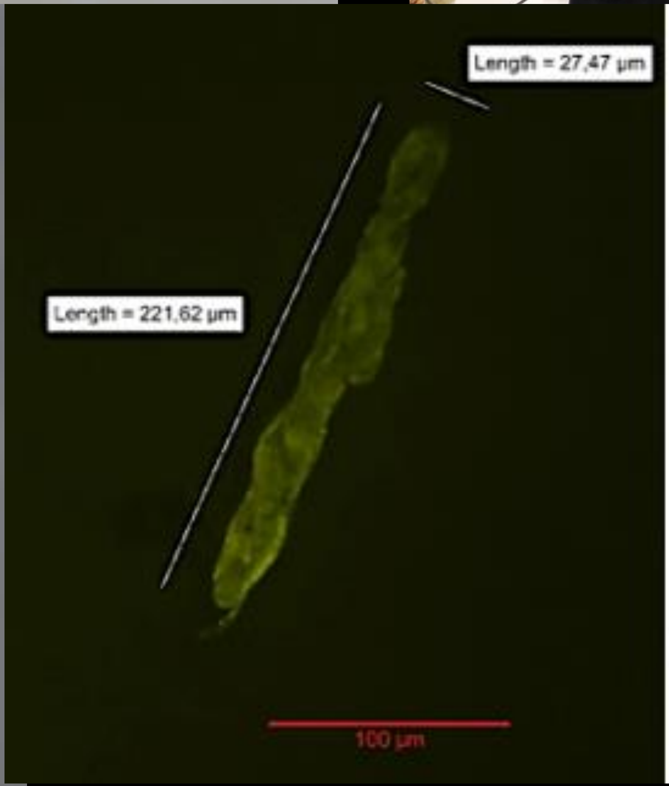

ANFIPODI coll. Ruffo
11 B - 1
a-g
h-n
11 C - 1


11,644 mm
9,690 mm
1 mm


Condino
SS240
Pieve di Ledro
Riva del Garda
Storo
SS249
Lago Idro
A
Tremosine
SR249
Malcesine
Monte Baldo
Tignale
Brenzone
Magugnano
Gargnano
Toscolano Maderno
San Zeno
Brentino Belluno
Salò
Torri del Benaco
Caprino Veronese
Lago di Garda
Garda
E45
SS12
Manerba del Garda
Bardolino
Soiano
Sant'ambrogio di Valpollicella
Lazise
Sirmione
SS450
Desenzano del Garda
Bussolengo
Peschiera
Z.a.i.

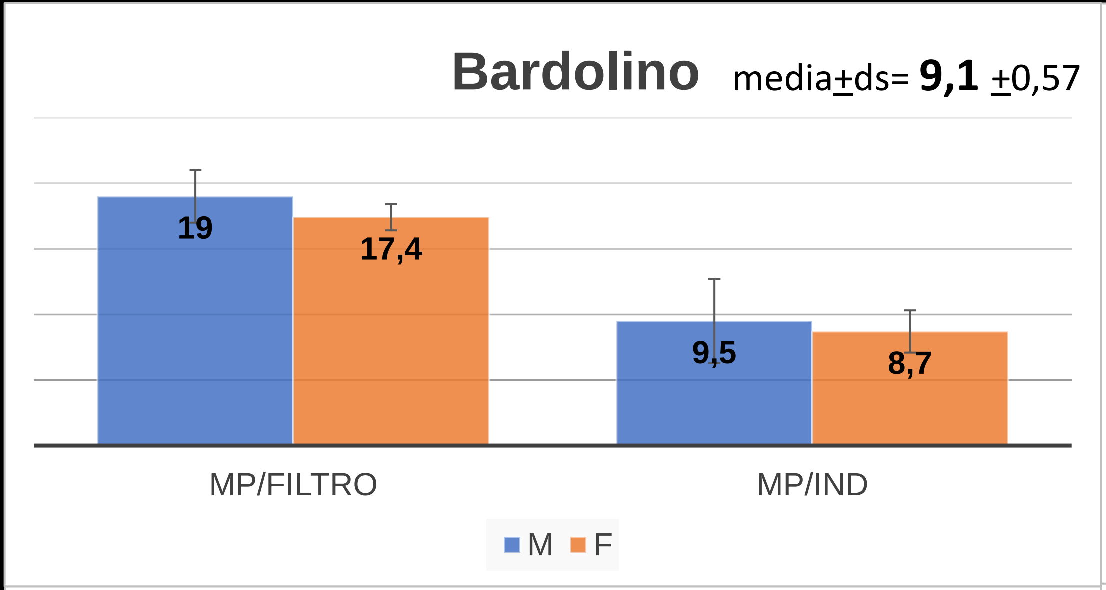

QBLOCK-15
QBLOCK-15
SET
RUN
S1 S2 S3
0.0
COUNTDOWN TIME
BLOCK TEMP


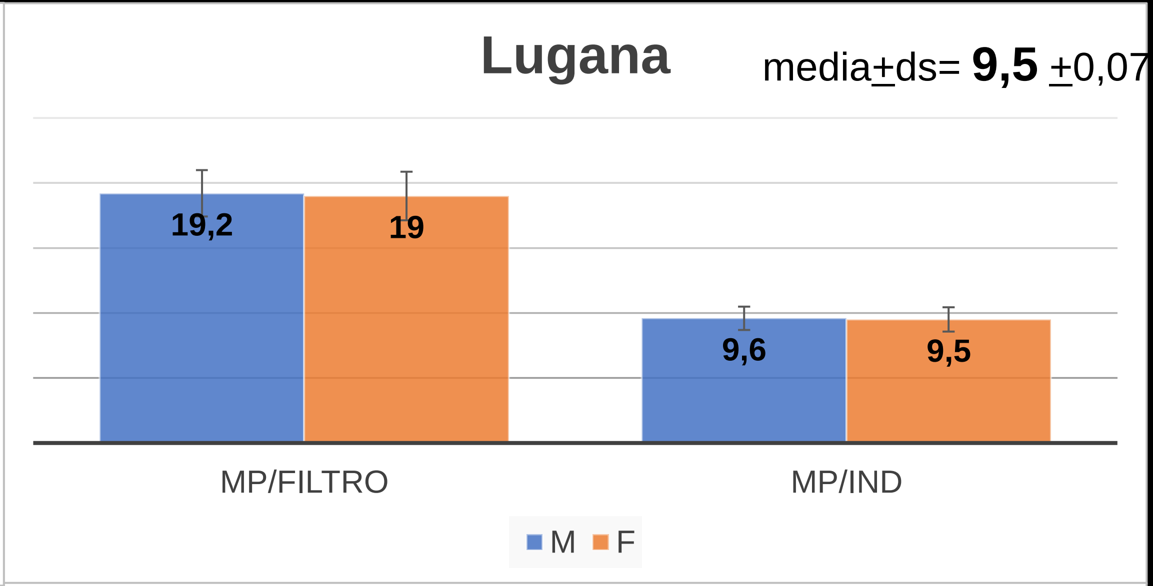


Length = 35,47 µm
Length = 24,36 µm
100 µm

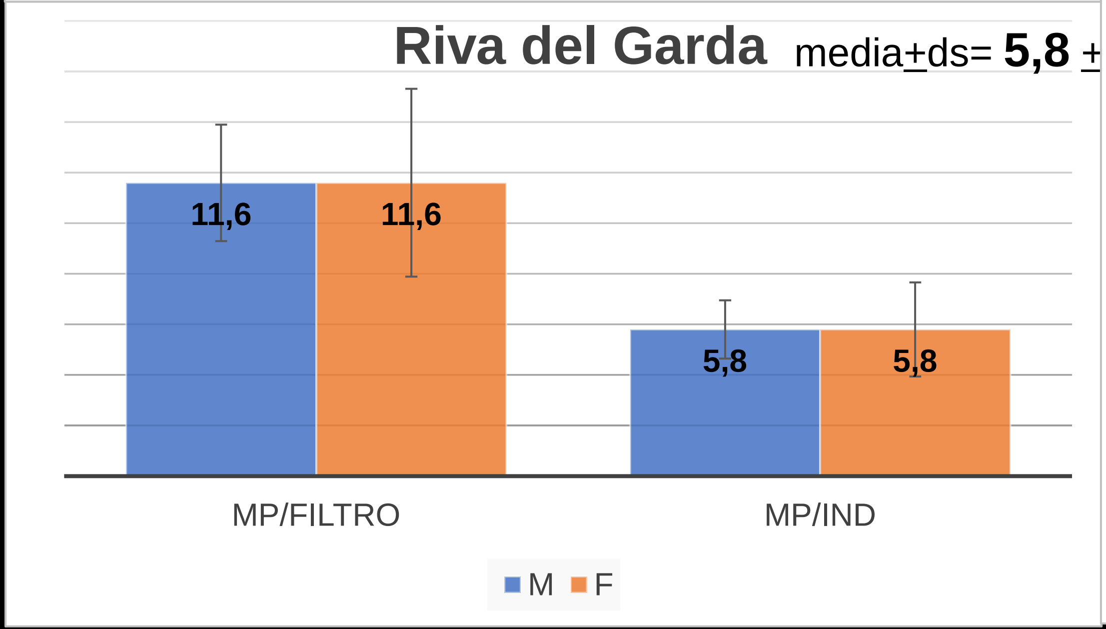
100 µm

Length = 27,47 µm
Length = 221,62 µm
100 µm

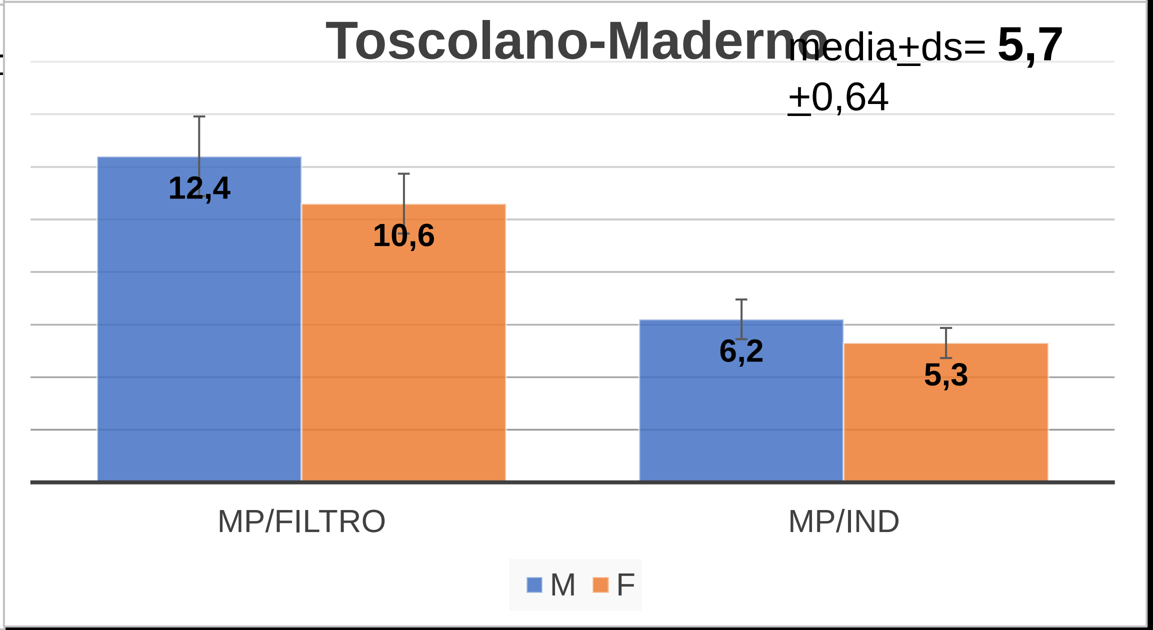
100 µm

Abbondanza di microplastiche per sito










MUSEO CIVICO DI STORIA NATURALE - VERONA
CROSTACEI ANFIPODI
collezione Sandro Ruffo
Talitridae
Orchestia
(specie diverse n° 2)


Orchestia
Lago di
tra
5. 1895 ex
Coll. Mus. Civ.
Orchestia cavimana
Heller
Fiume Arno -
Rosano
leg.
Coll. Mus. Civ. St. Nat. Verona
Orchestia cavimana Heller
Mulino della Madonna
presso il Tartaro (Verona)
15.4.1964 S. Ruffo leg.
Coll. Mus. Civ. St. Nat. Verona

A new species of mole-rat (Rodentia, Bathyergidae) from the Horn of Africa

SPARTACO GIPPOLITI[1] & GIOVANNI AMORI[2]

[1]Viale Liegi 48, I-00198 Rome, Italy. E-mail: spartacolobus@hotmail.com

[2]CNR, Institute of Ecosystem Studies, c/o Department of Biology and Biotechnology "C.Darwin" Viale dell'Università 32 - 00185 Rome, Italy. E-mail: giovanni.amori@uniroma1.it

Abstract

A new species of mole-rat with a striking colour pattern is described from a single mounted specimen in the historical collection of the 'Museo Civico di Zoologia' in Rome, Italy. The lack of skull and original collecting data does not allow the gathering of firm evidences about its taxonomic relationships, geographical range and ecological preferences. This taxon is provisionally allocated to the recently created genus *Fukomys* Kock, Ingram, Frabotta, Honeycutt and Burda 2006 on the grounds of pelage colour pattern and geographical origin. All the available evidence, including label and other fragmentary historical data, supports *Fukomys ilariae* **sp. nov.** as originating from the Lower Shebelle region near Mogadishu, Somalia, historically known as Benadir. This discovery highlights the relevance for biodiversity conservation of the Horn of Africa and the need of further faunistic research to describe its fauna.

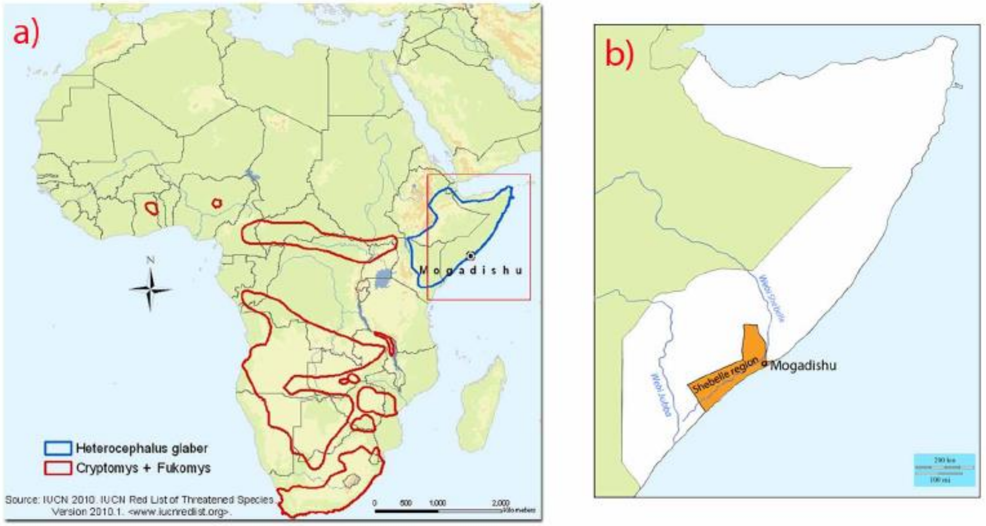


FIGURE 3. a) Map of Africa showing the approximate geographical ranges of the genera *Cryptomys, Fukomys* and *Heterocephalus,* together with the geographical location of Mogadishu; b) map of Somalia showing Lower Shebelle region.

biology letters
Global change biology

Biol. Lett. (2009) **5**, 532–534
doi:10.1098/rsbl.2009.0207
Published online 1 May 2009

Global changes and animal phenotypic responses: melanin-based plumage redness of scops owls increased with temperature and rainfall during the last century

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[1]*Laboratorio di Eco-Etologia, Dipartimento di Biologia Animale, Università degli Studi di Pavia, p.zza Botta 9, 27100 Pavia, Italy*
[2]*Dipartimento di Biologia, Università degli Studi di Milano, via Celoria 26, 20133 Milano, Italy*
**Author for correspondence* (*galeozot@unipv.it*).

The ecological effects of global climate changes include shifts of species' distribution and changes in migration strategies and phenotype. Colour polymorphism, which can be envisaged as a species' evolutionary response to alternating conditions or to a wide range of habitats, may be affected by climate changes as well. The scops owl (*Otus scops*) shows two main colour morphs, dark- and pale-reddish, as well as intermediate morphs. We investigated temporal trends in an index of plumage colour of Italian scops owls from museum collections (1870–2007). We found a significant increase in plumage redness over the last century, which was correlated with an increase in temperature and rainfall of the years before specimen collection. However, the temporal increase in plumage redness persisted after controlling for climatic variables, suggesting that other environmental factors could be involved. Our study indicates that ongoing climate changes might have either shifted the selective balance between colour morphs, or differentially affected migration and movement patterns of colour morphs.

Keywords: climate change; colour polymorphism; evolutionary response; melanin-based coloration; morphs

The evidence for range shifts as a way of coping with ongoing climate change is overwhelming (Parmesan 2006), and examples of phenotypic changes in relation to climatic variation abound. The latter include changes in phenology (reviewed in Parmesan 2006) as well as in morphology (Millien *et al.* 2006). Among phenotypic traits taken into account when studying animal responses to climate changes, intraspecific colour variation (i.e. colour polymorphism (CP); Gray & McKinnon 2007) has received little attention, except for two recent studies (Cameron & Pokryszko 2008; Lepetz *et al.* 2009). This is surprising, since CP is a widespread phenomenon in many animal taxa, and colour morphs can be considered as phenotypic genetic markers whose fitness effects are related to various ecologically important factors (Roulin 2004). Colour morphs may have directly evolved under both natural and sexual selection and also as an indirect response to selection exerted on genetically correlated attributes, e.g. on genes that regulate both melanogenesis and other physiological processes (Roulin 2004). Thus, CP may be appropriate for studying short- and long-term changes in gene frequencies under various sets of environmental conditions (e.g. Sinervo & Lively 1996).

A comparative study suggested that polymorphic species of owls showed a wider niche than monomorphic ones, since they frequented many different habitats, both open and closed, lived in seasonally alternating dry/wet climates and were active during both day and night (Galeotti & Rubolini 2004). Such results suggest that different colour patterns may be adaptive in different environmental conditions by providing behavioural or physiological advantages to their bearers. For example, in the Italian tawny owl (*Strix aluco*) populations, dark-reddish birds may suffer greater mortality in cool-dry years while being favoured in warm-wet conditions (Galeotti & Cesaris 1996). This may occur because of differences in thermoregulatory physiology among morphs (Mosher & Henny 1976). Therefore, the prevalence of dark- or pale-reddish morphs in a given population may reflect adjustments to local environment in this species, i.e. local adaptation.

If the fitness of different morphs differs between habitats, then polymorphism can be established with different equilibrium gene frequencies in different habitats or in the same habitat under different conditions. This equilibrium between morphs (and in gene frequency) may be disrupted or shifted by environmental changes, among which climate changes may play a major role through their direct and indirect effects on

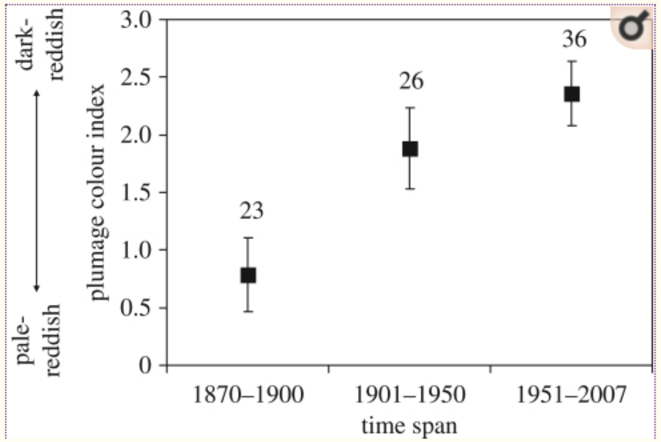

Figure 1.

Mean (±s.e.m.) scops owl colour index over three different time periods in Italy. Sample sizes are shown.

2. MATERIAL AND METHODS

We collected data from 281 scops owl specimens (1870–2007) mainly from Italian natural history museums (81.1%; electronic supplementary material). For each specimen, we obtained a continuous measure of colour plumage varying from 0 (pale-reddish individuals) to 4 (dark-reddish individuals; electronic supplementary material). The frequency distribution of colour variation was clearly bimodal (figure S1, electronic supplementary material). Details of climatic data used in the analyses (regional minimum yearly and seasonal temperature anomalies (°C) and a rainfall index, recorded over a 5 yr period starting from the year before specimen collection, i.e. from year$_{(n-1)}$ to year$_{(n-5)}$) are provided in the electronic supplementary material. In addition, we took into account the amount of Sahel wet season rainfall (Sahel rainfall index; electronic supplementary material), because the Sahelian savannahs probably represent an important wintering and passage area for the species (Cramp 1998). For the analyses, we considered 85 specimens in adult plumage, collected during the breeding season (May to September) (1875–2006), where the month, year and geographical location of the collection were reported.

Grazie per l'attenzione