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1. EDITORIAL

Los Grandes Simios, La Primatología y La Ciencia del Comportamiento Animal

Como ya se informó en el penúltimo boletín, la concesión del Premio Príncipe de Asturias 2003 de Investigación Científica y Técnica a la primatóloga británica Jane Goodall, especialmente conocida por su labor de investigación y conservación de los chimpancés, nos brinda una oportunidad excelente para revisar el papel que han desempeñado las investigaciones sobre los chimpancés y el resto de los grandes simios en el avance del conocimiento sobre diversos temas del máximo interés tanto en el campo de la primatología en general como en el más particular de la ciencia del comportamiento

animal. Para impulsar esta sección que ahora se abre en nuestro Boletín me sumaré al trabajo de edición que realiza nuestra editora, asumiendo principalmente la función de buscar colaboradores/as, de sugerir posibles temas y de editar los textos que se envíen a esta sección. Aprovecho también para hacer un nuevo llamamiento a cualquiera que esté interesado en colaborar en esta sección, que no esperé a ser invitado individualmente; las colaboraciones espontáneas serán recibidas con el mismo interés que las solicitadas! También os recuerdo que se aceptan contribuciones tanto en español como en inglés. Entre los muchos temas que podríamos tratar en esta sección se me ocurren los siguientes: el lenguaje, la imitación, la cultura, la cognición, las emociones, la conservación, la caza cooperativa, el uso de plantas medicinales, el uso de instrumentos, relaciones filogenéticas entre el chimpancé y el humano, estructura genética de las poblaciones de chimpancé, la agresión territorial, la dominancia y el comportamiento “político”, las estrategias de gestión de conflictos, el hacinamiento, los sistemas de vinculación, el sistema de apareamiento y de filopatría, etc. Esta lista no agota los posibles temas en los que los grandes simios han hecho grandes contribuciones, desafiando teorías que se suponían sólidas y abriendo nuevos horizontes y retos dentro de la primatología y, por supuesto, dentro de la ciencia del comportamiento animal.

F.Colmenares

2. COLABORACIONES

AGRESIÓN INTRAESPECÍFICA ENTRE COMUNIDADES DE CHIMPANCÉS, *PAN TROGLODYTES*:

LOS VECINOS PUEDEN SER BRUTALMENTE AGREDIDOS E INCLUSO ELIMINADOS

F. Colmenares

Los estudios que Jane Goodall inició en 1960 en Gombe, Tanzania, fueron en gran medida motivados por el deseo de rastrear entre nuestros “primos” más cercanos, los chimpancés, los posibles orígenes y precursores de muchos de nuestros propios comportamientos. Algunos de los primeros datos, como los referidos a la utilización y modificación de elementos del entorno para su uso como “herramientas”, fueron interpretados como evidencia de la estrecha proximidad entre la especie humana y el chimpancé. Además, la época veía con buenos ojos declaraciones que cuestionaran la posición entonces dominante de que los humanos éramos esencialmente diferentes de cualquier otra especie, incluida el chimpancé. Cualquier observación que contribuyera a la Causa de acortar las distancias entre el chimpancé y el humano era, pues, muy bien recibida.

En los años setenta, Goodall y otros observadores de chimpancés en su hábitat natural, como fue el caso del equipo japonés dirigido por Toshisada Nishida, que había emprendido un estudio igualmente longitudinal a unas 100

millas al sur de Gombe, en las montañas Mahale, comenzaron a obtener datos alarmantes sobre el comportamiento agresivo que exhibían especialmente los machos adultos hacia los machos (e incluso las hembras) de otras comunidades. El grado de brutalidad que llegaba a alcanzarse en estos fatales encuentros transmitía una visión del comportamiento social del chimpancé que empañaba considerablemente la imagen idílica que nos habíamos construido de nuestros primos y nos hacía sentir incómodos cuando nos mirábamos en el espejo de nuestra historia. En su apasionante monografía, publicada en 1986, Goodall describe con detalle los 16 ataques realizados por los machos de la comunidad de Kasakela sobre hembras de otras comunidades, la aniquilación de la comunidad de Kahama como consecuencia de los ataques de los machos de la comunidad de Kasakela y las variaciones en el tamaño del territorio de ésta última en respuesta a variaciones en el número de machos adultos de su comunidad vecina y rival, la Kalande.

La brutalidad de los comportamientos utilizados por los agresores durante estos encuentros entre comunidades resulta cuando menos llamativa, máxime cuando los agresores y las víctimas han sido parte del mismo grupo y han jugado juntos en el pasado, como fue el caso de los miembros de la comunidad de Kahama, originalmente integrados en la de Kasakela. Los agresores buscan a las víctimas y les dan caza, las atacan en grupo, las inmovilizan y las incapacitan. La insensibilidad que muestran hacia las respuestas de sus víctimas moribundas es espeluznante ¿Por qué muestran los machos de chimpancé estos comportamientos agresivos tan brutales?, ¿Cómo es posible que estos comportamientos tengan lugar entre individuos que se conocen? No existe ninguna respuesta satisfactoria, en gran medida porque el número y precisión de las observaciones no son muy elevados, una circunstancia lamentablemente bastante común en los estudios de campo.

Algunos autores han especulado acerca de los paralelismos entre estos comportamientos de los chimpancés y el fenómeno de la guerra en nuestra propia especie, alimentando el mito (o plausible hipótesis) del Simio Asesino (“Killer Ape”). La hipótesis sostiene que este lado oscuro del comportamiento humano y del chimpancé bien podría ser una herencia de nuestro común ancestro, una especie que vivió, quizá, en un escenario ecológico y social similar al de los chimpancés actuales y que favoreció el desarrollo de los elevados niveles de hostilidad y de brutalidad entre grupos de que son capaces ambas especies actuales. Afortunadamente, como señalan algunos científicos, la ruta seguida por los ancestros de los chimpancés (y de los humanos) no es inexorable. En efecto, existe una segunda especie de chimpancé, conocida como el chimpancé pigmeo o bonobo, que ha desarrollado un sistema social bien distinto. En esta especie, no sólo la expresión de la agresión intra-grupo es mucho más moderada, sino que, además, los individuos recurren frecuentemente a un amplio y elaborado repertorio de comportamientos socio-sexuales para resolver sus diferencias. Hasta la fecha no se han descrito en esta especie comportamientos de agresión entre comunidades similares a los observados en los chimpancés. El mensaje es alentador.

Lecturas recomendadas:

Goodall, J. (1986). *The Chimpanzees of Gombe. Patterns of Behavior*. The Belknap Press of Harvard University, London.

Power, M. (1991). *The Egalitarian, Human and Chimpanzee: An Anthropological View of Social Organization*. Cambridge University Press, Cambridge.

Smuts, B. B. y otros [eds.] (1987). *Primate Societies*. University of Chicago Press, Chicago.

De Waal, F. B. M. [ed.] (2001). *Tree of Origin, What Primate Behavior Can Tell Us About Human Social Behavior*. Harvard University Press, Cambridge, Mass.

Wrangham, R. y Peterson, D. (1997). *Demonic Males. Apes and the Origins of Human Violence*. Bloomsbury, London.

CONFLICTOS AGRESIVOS Y COMPORTAMIENTOS DE PACIFICACIÓN EN LOS CHIMPANCÉS, *PAN TROGLODYTES*: LAS DOS CARAS DE LA MONEDA SON IGUALMENTE NATURALES

F. Colmenares

Una de las señas de identidad de la etología ha sido la utilización del método inductivo para generar hipótesis acerca de los mecanismos y/o las funciones del comportamiento. Este fue precisamente el método que condujo al famoso etólogo holandés Frans de Waal a descubrir en 1979 una dimensión del comportamiento social que poco después alcanzaría el estatus de área de estudio con autonomía propia y bautizada con la etiqueta de “Gestión y Manejo de Conflictos Sociales”. En efecto, De Waal observó que los chimpancés de la colonia del Zoo de Arnhem que habían participado en un conflicto agonístico, en lugar de alejarse el uno del otro, tendían a intercambiar comportamientos amistosos poco tiempo después de que el conflicto finalizara. Es decir, la agresión no conducía a un distanciamiento de los combatientes; el efecto era precisamente el contrario, la agresión intra-grupo conducía a una reducción de la distancia y a un incremento de las exhibiciones de comportamiento afiliativo; además, éste ocurría precisamente entre los propios antagonistas y, en menor medida, entre los antagonistas y otros miembros del grupo. De Waal acuñó los términos “reconciliación” y “consolación” para referirse a estos dos tipos de interacciones, respectivamente. Ambas etiquetas son funcionales: la primera propone que el efecto de tales comportamientos afiliativos post-conflicto es la reparación del vínculo social entre los antagonistas, el cual ha quedado momentáneamente dislocado por el conflicto, mientras que el segundo hipotetiza que los contactos amistosos que tienen lugar entre los antagonistas y terceras partes no implicadas es la reducción de las tensiones. De Waal encontró que la conducta típica de la reconciliación era el “beso” y la de la consolación el

“abrazo”. La función general que se dio a estos comportamientos fue la de actuar como una suerte de mecanismo de homeostasis social.

Este estudio empírico representó, como ya he señalado, el pistoletazo de salida para una parcela de investigación que ha sido extraordinariamente fecunda en las décadas siguientes. La observación empírica publicada por De Waal y Roosmalen en 1979 espoleó la reflexión y la elaboración teórica y conceptual acerca de las relaciones sociales y la función de la agresión, el avance en la metodología adecuada para operativizar las variables relevantes y contrastar las hipótesis que se estaban proponiendo, y, como no, la recogida de datos empíricos que permitieran dar cuenta de los fenómenos descritos. De Waal desarrolló el denominado Modelo Relacional, según el cual, lo razonable es esperar que las especies sociales hayan desarrollado mecanismos que reduzcan los efectos negativos o antisociales de la agresión. Esos mecanismos, que serían tan naturales como los que gobiernan la expresión de la agresión, se activarían para reducir las tensiones inevitablemente ligadas a la vida social y para reestablecer su armonía y cohesión, tan necesarias para beneficiarse de la vida en grupo. El etólogo italiano Filippo Aureli enriqueció el marco teórico proponiendo la hipótesis de que la estrategia de la reconciliación debía haber evolucionado porque contribuía a reducir la ansiedad y el estrés entre los antagonistas, factores que pueden obstaculizar las relaciones pacíficas y que, sin duda, reducen la cohesión de los grupos. De Waal propuso un método observacional para investigar la hipótesis de la reconciliación (el conocido método de comparar muestras post-conflicto con muestras control; que ha sido mejorado por investigadores posteriores) y Aureli desarrolló un método alternativo que permite identificar la ventana de tiempo durante la cual la frecuencia de los comportamientos afiliativos es más elevada durante un periodo post-conflicto que durante un periodo control comparable. Cords realizó experimentos decisivos para ir más allá de la mera demostración de que la amistad es más probable después de un incidente agresivo que durante un periodo control. En efecto, ella demostró que sus sujetos sólo colaboraban después de un conflicto si éste era seguido por comportamientos afiliativos.

Los chimpancés nos abrieron el camino hacia una visión distinta de la socialidad, donde los conflictos y la manera en la que éstos se gestionan requiere conocimientos de psicología, etología, antropología y fisiología. La psicología nos ayuda a entender cuáles son los requisitos cognitivos que subyacen a la reconciliación con un antagonista o a la consolación de una víctima. La etología busca claves en los escenarios sociales y ecológicos que puedan haber promovido la presencia o ausencia de dichas estrategias. La antropología aporta conceptos que permiten relacionar lo que se observa en animales no humanos y en la especie humana. Finalmente, la fisiología nos permite responder a muchas incógnitas acerca de los fenómenos fisiológicos cuya actividad se ha postulado para dar sentido a los fenómenos observados a nivel comportamental. El Modelo Relacional de De Waal ayuda a entender que el chimpancé, como tantas otras especies, está diseñado tanto para exhibir comportamientos brutales y de una violencia inusitada, como para hacer gala de demostraciones espectaculares de afabilidad y pacificación. La expresión de ambas caras en el mismo animal depende de múltiples factores:

experienciales, sociales, demográficos, ecológicos, etc. A pesar de las consecuencias bien distintas que cada una puede tener cuando se manifiesta, las dos son naturales, con ambas hay que vivir...Nuestra esperanza es que a través de su estudio podamos potenciar más la expresión de la que consideramos más positiva y canalizar mejor las consecuencias de la que consideramos menos deseable.

Lecturas recomendadas:

Aureli, F. & De Waal, F. [eds.] 2000. *Natural Conflict Resolution*. University of California Press, California.

Colmenares, F. 1996. Conflictos Sociales y Estrategias de Interacción en los Primates, II. Mecanismos, Función y Evolución. En: F. Colmenares (Editor), *Etología, Psicología Comparada y Comportamiento Animal*. Pp.401-457. Editorial Síntesis, Madrid

De Waal, F. & van Roosmalen, A. 1979. Reconciliation and Consolation among Chimpanzees. *Behavioral Ecology and Sociobiology*, 5, 55-66.

De Waal, F. 1982. Chimpanzee Politics. Jonathan Cape, London. [Traducción catalana, 1993, Alianza Editorial, Madrid].

THE MACAQUE GENUS: NEW PERSPECTIVES

THE CALPE CONFERENCE, GIBRALTAR, NOV. 5- 8, 2003: A SUMMARY

Jacqueline Donohoe

ORIGINS:

Past ecological changes have affected the present distribution of macaque species. There was a gradual fall in temperature from the Miocene period, when the ancestor of present day macaques appeared on the scene, down to the Pleistocene. The Pleistocene is the period characterised by most drastic change, including habitat fragmentation, refuges, the appearance and disappearance of land bridges, and sea rafting.

Data evidence the presence of ancestral macaques in central Africa 8 million years ago (mya). From there they extended northwards, reaching NW Africa 7 mya, and NE Africa a million years later. The Gibraltar Strait gave them access to Europe where they were to emigrate between 5 and 3 mya. Their migration eastwards could have taken place down through eastern Europe or from NE Africa. There is evidence of macaque populations in India from 3 mya, and from here their ample extension as far as Indonesia and Japan. It is believed that the last macaques disappeared from southern Spain during the past 100,000 years. (C. Abegg)

Present day methods of molecular genetic analysis have offered new perspectives as to macaque speciation and phylogenetic relationships. The use of maternal, paternal and bi-parental DNA of individuals from all recognised macaque species have made it possible to reconstruct colonization, diversification and speciation. For example, an apparently rapid evolutionary radiation characterized the Sulawesi group, where both biotic and abiotic factors played a role, a genetic impact of hybridization being mediated by male transfer. It has also made it possible to up-date the phylogeny of the genus. Paternal DNA testing has shown that *M. arctoides* and *M. sinica* are related, but maternal DNA testing relates *M. arctoides* to the Fascicularis group. It is probable that *M. arctoides* is a relatively new species resulting from the hybridization of *M. sinica* Y-DNA and *M. fascicularis* mtDNA. A current example are the hybrids between *M. maura* and *M. tonkeana* that have the mtDNA of *M. maura*.

Regarding *M. sylvanus* in particular, recent genetic studies situate the species in a monophyletic group with *Macaca* since 5.5 mya, and disprove its relationship with *M. silenus*. The evolution of the species within the *Macaca* genus appears to have been complex and reticulated and not a linear set of bifurcating events. (D. Melnick). A study on interspecific variations in pelage have led to a hypothetical description of the last common ancestor to the genus: shoulders medium-brown in colour, lighter on legs and ventrum, darker on the crown and lower back; freckled to grey-coloured face; modest whiskers and slight beard; oestrous coloration pastel pink or blue-grey; round, separate ischial callosities horizontally placed; swelling around the anus, and swollen labia; females weighing between 6 to 7 kilos; sexual dimorphism; short to modest tail. This description is very close to the present day species of *M. sylvanus* and *M. nemestrina*. Another interesting hypothesis has to do with tail reduction or loss. From a study of the anogenital swellings of female Sulawesi macaques, the involvement of the tail in oestrous swellings may have been a determining factor in its reduction, and not climatic changes supported by more traditional theories. (F. Froehlich)

FEMALE PHILOPATRY AND FISSION:

A characteristic of the Macaque genus is female philopatry. The number of matriline within a group will depend largely on population density. When the group becomes too large, fission may occur, whereby a matriline will break off from the group and settle in another area. Some of the circumstances leading up to fission that have been observed are: increase in competition, decrease in female reproductive success, changes in the male hierarchy, decrease in relatedness, loss of group cohesion, and the formation of clusters. This last circumstance can be frequently seen before fission occurs, that is, there is a clustering of related kin that will remain with the matriline when the separation takes place. Fission is the only way for a matriline to spread in natural conditions. It favours kin selection, increasing within-group degrees of relatedness, thereby contributing to the genetic structuration of the population. (N. Ménard)

Samples were collected to test genetic variation within and between the Moroccan and Algerian populations to compare the mtDNA analyses with those of the Gibraltar population to establish the origin of the latter. Phylogenetic analyses suggest that the Gibraltar population is formed by three different haplotypes: two from Morocco and one from Algeria. This study has made it possible to confirm the origin of the present-day matrilineal populations inhabiting the different sites on the Upper Rock of Gibraltar. (L. Modolo)

SOCIAL STRUCTURE:

The Macaque genus is probably one of the most successful among primates. Although its populations are disjunct and its number reduced, some of the species show a high degree of flexibility as to habitat and diet. Although most macaque species are to be found between the Equator and the Tropic of Cancer, 10% of the species live in the temperate zone. The most adaptable ones include *M. mulatta*, *M. fuscata* and *M. sylvanus*. Environmental factors can greatly influence group size, group composition, home range size, activity budget, and the distribution of food resources. It could be thought that this last factor would be vital in its effect on social behaviour, clumped resources such as fruit trees and insects leading to frequent and intense competition, and a despotic social structure, while an even distribution such as leaves would lead to infrequent, mild competition, and a tolerant social structure. However, data from a study on the intake of different resources did not completely support this hypothesis. For example, *M. mulatta*'s diet consisted of 9% fruit, no seeds, 85% leaves, no invertebrates, and 5% other. Their feeding was mainly done on the ground and consisted of leaves and trifolia. On the other hand, a tolerant species such as *M. nigra* had a diet of 66% fruit, no seeds, 2% leaves, and 31% invertebrates. As for the Moroccan *M. sylvanus*, the diet of those inhabiting the deciduous oak forest consisted of 1% fruit, 32% seeds (acorns), 28% leaves, including lichens and herbs, 11% invertebrates, and 28% other. The cedar oak population differed somewhat: 4% fruit, 27% seeds, 48% leaves, 6% invertebrates, and 15% other. From the data available, it would be premature to hypothesize that social behaviour varies according to regional ecological differences. (D. Hill)

Traditional theories talk about group living, competition and aggression. However, modern studies focus on interspecific variations in conflict management, that is, the mechanisms different species use to avoid aggressive escalation and mitigate its negative consequences. These consequences can range from risk of further aggression, decrease in foraging time, to reduction of tolerance around resources. Mechanisms to increase tolerance before a potential conflict can include allogrooming, triadic male-infant interactions (particularly in Barbary and Tibetan macaques), and dominance-submission signals (silent bared-teeth display, rounded mouth). In the post-conflict situation, negative consequences can be mitigated by kin-directed redirection and reconciliation, the latter being inversely proportional to kin bias. However, no evidence was found for unsolicited consolation. Interspecific variation seems to be related to differences in dominance style

which, in some cases, could correspond to phylogenetic relationships. (F. Aureli)

Actually, the selective processes and ecological factors that influence the evolution of social systems are not known. The question is if internal constraints define the space of possibilities open to macaques to cope with environmental constraints.

Two real macaque worlds can be envisaged if we take into account 3 variables: conflict asymmetry (unidirectional aggression leads to submission signals, while bidirectional aggression will most likely lead to conciliatory behaviour, due to feelings of anxiety in both opponents), mother protectiveness (this variable will depend on covarying factors such as the degree of kin bias (the lesser the kin bias, the higher reconciliation), the development of affiliative interactions, the meaning of the bared-teeth display, and the patterns of female rank inheritance), the amount of alloparental behaviour.

From available data, two different macaque social structures can be constructed:

1.- An asymmetric structure where conflict asymmetry rates low, mother protectiveness, high, and alloparental behaviour, low. An example would be the strict hierarchical structure of *M. mulatta* societies.

2.- A symmetric structure in which conflict asymmetry and alloparental behaviour rate high, and mother protectiveness, low. A permissive social structure of this type would be that of *M. tonkeana* or *M. nigra*.

If social tolerance were to be graded from despotic to tolerant, the Barbary macaque society would classify as having a moderate dominance asymmetry, a relatively low level of nepotism, elaborate conciliatory behaviours, and a high degree of social tolerance. According to data from comparative studies, Barbary macaque counter-aggression in conflicts reaches a 41.8%, and their reconciliation, a 24%. However, their kin preference rates a 53%, and their peaceful intervention in conflicts, a 10.4%, which is high in comparison with the 8% for *M. tonkeana*, or 9% for *M. nigra*. It has been seen that the bared-teeth display can be a sign of submission in some species, a sign of affiliation in others, and a sign of both in *M. sylvanus*.

Other points to be emphasized in relation with this species are frequent alloparental care, relaxed patterns of rank inheritance among females (in contrast with the “youngest ascendancy” pattern in *M. mulatta*), and the late dispersal of males (two-thirds transfer after 7 years of age while others remain in their natal group).

The ancestral macaque social structure has probably evolved from a tolerant style to a despotic one during the more recent radiation of macaques (examples being the present social structures of *M. mulatta* and *M. fuscata*), in which several appeasement behaviours were lost and the societies became

more nepotistic and hierarchical, thus decreasing social tolerance. This phylogenetic analysis of the social behaviour of present day macaque species seems to indicate that the patterns of social organisation in *M. sylvanus* can be taken, in their most part, as ancestral. This should not come as a surprise considering that morphological and molecular evidence point to *M. sylvanus* as the most ancient offshoot of the genus *Macaca*. (B. Thierry)

REPRODUCTIVE BEHAVIOUR:

Macaques seem to be limited in their ability to discriminate kin and males do not appear to recognise their offspring. In the majority of macaque societies the relatedness threshold is low and there is no support from relatives. However, this does not hold true for *M. sylvanus* where support has been observed from grandmothers, aunts and, even, non-kin. It appears that age proximity can influence social behaviour when the individuals are raised in the same group, and this can be extended to later sexual activity where sexual interactions are preferred with strangers. (A. Paul) Studies done on infant handling by male macaques have provided the following hypotheses: paternal: (they are the sires and the benefit is direct), kin selection: (the male is related to the mother and supports her, so the benefit is indirect), care-then-mate: (the male uses it as a mating strategy), agonistic buffering, coalition formation with other males in the group and with the mother and rank strategy. Recent studies on male-infant dyadic interactions among the Barbary macaques would mainly support hypotheses 2, 3, 5 and 6. Studies done on carrying preferences show that males carry more for multiparous females, and this takes place more often between high-ranking adult males and high-ranking babies. Moreover, it was found that, on average, males are related to the mother of the preferred infant. However, there is no correlation between rank order and the number of infants sired. Regarding infant carriage in Barbary macaques, the study concluded that it is a complex, multilevel behaviour based on coalition formations that seem to be important for maintaining rank and that could reflect a mating strategy. It also seems to be influenced by relatedness to the mother, perhaps facilitating access to the infant. In general, the data suggest that males interact with infants in their own interest and not for altruistic purposes. (R. Küemmerli)

Male reproductive success, besides being a reflection of the male's own potential, depends on other parameters such as, female group size, duration of the ovarian cycle, number of cycles prior to conception, and cycle overlap between females. It has been seen that females prefer polyandrous mating and observations support the hypothesis that the fitness benefit derived from it is a reduction in the risk of infanticide. In order to achieve this they use tactics that include active behavioural escape, long periods of receptivity, unpredictable ovulation, and signals such as exaggerated swellings, and copulation calls. (C. van Schaik)

This evolution of signals used by females to attract males varies among species. In *M. sylvanus* there are three: sexual swelling, coloration, and copulation calls (CC). The latter probably evolved in time prior to the other two since these would have coincided with the acquisition of colour vision.

Moreover, there are a number of present day species that have no prominent visual signal (PVS) so, perhaps, the reproductive state is actually revealed acoustically, the remaining signals being secondary in importance. Therefore, it is of interest to examine the possible functions of the female CC. Firstly, it could incite interference by another male and, thereby, provoke male-male competition, providing an indirect means of female choice. It would then confuse paternity and ensure baby-care by reducing intercopulatory intervals (the sperm competition hypothesis). Playbacks of the female CC showed that male Barbary macaques were able to discriminate between female copulation calls given at different stages of the oestrous cycle. They responded more strongly to those calls given at the time when conception was most likely to occur. (S. Semple). A more detailed analysis of the Barbary macaque vocal repertoire revealed a highly graded structure within and between call types, but little acoustic dimorphism. Although phylogenetic relationships appear to set the framework for the structure of calls, these being largely genetically controlled, social structure may influence their function and variation between species. Available data do not support the dichotomy between graded (continuous acoustic variation) and discreet (no intermediates between call types) repertoires as being determined by ecological factors. (J. Fischer) In a study of the Middle Hill group in Gibraltar, female Barbary macaques displayed prominent anogenital swellings despite their being highly seasonal breeders. All showed from 2 to 3 swelling cycles, including post-conception swellings. The size of the maximum swelling ranged between 44 to 136 cm² and was not related to body weight, age or rank. In all cases, ovulation occurred within the period of maximum swelling. Post-conception swellings were to be observed approximately 26 days after ovulation. Males did not seem to distinguish between a non-conceptive copulation, a conceptive copulation or a post-conceptive one. (U. Moehle) There is also evidence that Macaque males are more attracted to larger swellings and intervene for them. Anogenital swellings may be maintained during pregnancy to stimulate male-female alliances with side effects on social tolerance and to mitigate stress. (J. Dittami) Among the female population of *M. mulatta* on Cayo Santiago, it has been observed that access to food affects the age of first birth. 90% of the females have their first baby at four years of age. However, 3 year old females weighing over 5 kilos have become mothers. This obviously affects life-time reproduction. Turning to male reproductive ecology on Cayo Santiago, where ecological constraints are minimal, competition over access to females would be expected. However, this was not the case. Data did not point to body mass as the cause of variance in reproductive success among adult males, but it did affect relative reproductive output among younger males. It could be a question of good nutrition. This increases the testosterone level, producing more estrogen with a consequent reddening of the facial skin, thus leading to female choice. It was seen that 10 or 12 babies born on the same day had been sired by the same male and it was never the alpha male. Many offspring were sired by non-troop males with no rank within the group. Females tended to prefer outsiders.

In conclusion, there seems to be no single optimal strategy for male macaques. Their reproductive success is conditioned by the internal and

external circumstances of the individual, and determined by the distribution of females. (F. Bercovitch)

PRESENT DAY DISTRIBUTION:

The Barbary macaque population of Morocco is presently reduced to approximately 10,000 individuals inhabiting the cedar and oak forests of the Middle Atlas, the High Atlas and the Rif Mountains. The Algerian population numbers between three and four thousand distributed between Akfadou, Roc des Singes, Kherrata, and Djurdjura. The semi-free ranging Barbary macaques of Gibraltar are about 200 in number. (L. Modolo)

The Middle Atlas population of Morocco is distributed within 100 linear square kilometres of 16 transects connected by 300 kilometres of road. Over the past ten years the population density count has dropped between 30% and 40%. However, a density count in this habitat is unreliable due to the way in which the macaques make use of space. Each troop usually has a home range of approximately 2 square kilometres, but movements are unpredictable due to the presence of modern-day predators (humans and dogs). The macaques prefer the cedar trees or rocky cliffs for protection. The drastic fall in population size over the past years has been due to (1) culling: the macaques are considered pests due to their bark stripping, an alternative for survival when water is scarce. Nevertheless, studies have shown that bark stripping is still high where primate density has greatly decreased, and that the negative ecological impact is being caused by human factors such as underbrush overgrazing by mixed flocks of sheep and goats; and (2) the unconditioned exploitation of resources: the destruction of the forests in this area by excessive logging, cutting for fire wood, etc. This has directly affected the distribution of the macaque population. In fact, the sex ratio balance and the number of births have been recognised as an indicator of the quality of the forest: ranging from a high density of adult males in the refuge forests and very degraded forests to a balanced sex ratio in intact forests, and a high density female population in degraded forests; the birth rate being inversely proportionate to the number of adult males in the group. The situation does not predict an optimistic future for the species if immediate measures are not taken to improve forest management and preservation. (A. Camerio, M. Mouna) A situation similar to that in Morocco exists in Japan regarding *M. fuscata*. The number of macaques has decreased drastically due to habitat degradation, human encroachment, eradication as agricultural pests, among other threats. Since 1998 around 10,000 individuals have been killed. Despite the decrease in population density, the macaque habitat has expanded. This expansion is due to changes in their natural habitat. The macaques tend to move out towards the edge of the forest. Some troops come in contact with agricultural areas and, though culling occurs to control crop damage, these troops have shown an increase in birth rate and a decrease in infant mortality.

The Wildlife Protection Law was revised in 1999, but is not considered compulsory. In general, scientific data are deficient, programmes are

inappropriate, personnel and laboratories are scarce, economic support lacking, and collaboration weak. (Y. Muroyama).

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Thierry, B., et al.: “Barbary but not barbarian: An evolutionary journey through macaque sociospace”.

Van Schaik, C.: “The interaction between male and female reproductive strategies

3. ACTUALIDAD PRIMATOLÓGICA

3.1. APUNTES DE ACTUALIDAD

FACING UP TO ENDANGERED APES

A United Nations-sponsored meeting in Paris this week will indicate whether humanity has the wherewithal to save our closest cousins in the animal kingdom from extinction

Crystal Miller

As any orang-utan who has looked a human straight in the eyes will know, we have something, well, quite orang-utanish about us. Evidence increasingly points to the great apes – orang-utans, gorillas and chimpanzees – having a range of ‘human’ attributes, such as culture, emotion and complex social interaction, not to mention being highly intelligent and a marvel to watch. If we allow the great apes to go extinct, we will create a missing link in the understanding of who we are and where we came from.

But all three genera of great apes are climbing up the scale of extinction risk, with most populations somewhere between ‘endangered’ and ‘critically endangered’.

Behind these tags lies the stark reality that numbers are now dropping precipitously. Unless we act soon, every species of great ape will be extinct in the wild in our childrens’ lifetimes.

Gorillas live in ten African countries, orang-utans on the islands of Borneo and Sumatra in Indonesia and East Malaysia, and chimpanzees in 21 countries in Africa. But by 2030, just 10% of virgin habitat for apes in Africa will still exist, and less than 1% of it for orang-utans.

Destruction of forests is one cause of the decline; hunting for bush-meat or for the live-animal trade is another. And apes have the misfortune to tend to

live in war zones, which hampers conservation efforts. Even in remote areas, away from their number-one enemy – us – apes are being wiped out by the Ebola virus (see [Nature 422, 551; 2003](#)).

In Paris on 26-28 November, representatives of African

and Asian states with ape populations are due to meet with scientists under the auspices of the United Nations' Great Apes Survival Project (GRASP). They hope to thrash out a conservation strategy for the great apes, endorsed by everyone with an interest in their survival.

There is certainly no shortage of interest. Numerous organizations exist to save them. On paper, great apes are already protected by law in every country they inhabit, national action plans exist, and the international ape trade is banned. But the numbers just keep dwindling.

The meeting's organizers acknowledge that action is needed. Existing conservation efforts are inadequately coordinated and too piecemeal, and projects are set up as funds become available, rather than as part of an overall strategy. The meeting will attempt to expand the ability of GRASP to oversee and implement such a strategy.

Another proposal is to create an International Great Ape Commission – recognized by established zoological bodies – to bring together the countries affected, donors, scientists and non-governmental organizations, to generate publicity for the cause, and to develop common plans and more rigorous systems for evaluating best practice in conservation approaches.

The attention that the meeting will bring to the issue is welcome. The United Nations reckons that a serious effort to lift the immediate extinction threat hanging over great ape populations would cost some US \$25 million. It would be ironic if, just when humans have sequenced our own genome, we allowed a group of species that share almost 99% of it to go extinct.

Nature 426, 369 (27 November 2003)

New Research Finds Some Animals Know Their Cognitive Limits

HUMANS ARE ABLE TO FEEL UNCERTAINTY. THEY KNOW WHEN THEY KNOW SOMETHING AND WHEN THEY DON'T. THIS CAPACITY FOR «METACOGNITION» (THINKING ABOUT THINKING), OR COGNITIVE SELF-AWARENESS, IS THOUGHT TO BE ONE OF HUMANS' MOST SOPHISTICATED COGNITIVE CAPACITIES AND TO BE LINKED TO OUR REFLECTIVE CONSCIOUSNESS.

One of the important questions in the field of animal and human psychology is whether this metacognitive capacity is uniquely human, or whether nonverbal, nonhuman animal species have a level of metacognition that approaches that of humans. Animals could demonstrate a capacity for metacognition if they could report their uncertainty or doubt when confronted with a difficult trial or situation. However, research in this area has been slow to emerge because it is inherently difficult to ask nonverbal animals whether they know, or feel uncertain, or have doubts.

Steps toward solving this problem now have been made by a research team led by John David Smith, Ph.D., associate professor in the Department of Psychology in the College of Arts and Sciences at the University at Buffalo and UB's Center for Cognitive Science. The research team includes Wendy E. Shields, Ph.D., of the Department of Psychology, University of Montana, and David A. Washburn, Ph.D., of the Language Research Center at Georgia State University.

Their research, «The Comparative Psychology of Uncertainty Monitoring and Metacognition,» will be presented in the December issue of *The Behavioral and Brain Sciences*, one of the premier journals in the field of cognitive science.

The article describes three studies by the authors with humans, a group of Rhesus monkeys and one bottlenose dolphin that used behavioral, nonverbal measures of metacognition. In these tasks, animals experienced a mix of «hard» and «easy» perceptual or memory trials. If they completed the trial, the subjects earned a reward when correct or a timeout period when wrong, Smith says.»The key innovation in this research also was to grant animals an 'uncertain' response so that they could decline to complete any trials of their choosing,» Smith says. «Given this option, animals might choose to complete trials when they are confident they know, but decline them when they feel something like uncertainty. To show this behavioral pattern, though, animals would have to monitor some psychological signal of confidence or uncertainty and respond adaptively to it.»

The researchers have shown that the monkeys and the dolphin used the «uncertain» response in a pattern that is essentially identical to the pattern with which uncertain humans use it. Indeed, Smith says, «the patterns of results produced by humans and animals provide some of the closest human-animal similarities in performance ever reported in the comparative literature.» Moreover, it is clear that a higher-level cognitive interpretation of the results is warranted – low-level behavioral explanations cannot explain the phenomena. In short, Smith says, «the results suggest that some animals have functional features of, or parallels to, human conscious metacognition.» They apparently know when they know and when they don't know, he adds.

Another intriguing finding emerging from this area of research is that species that are less cognitively sophisticated (e.g., rats and pigeons) have not thus far expressed the same capacity for cognitive monitoring or cognitive self-awareness as that expressed by the monkeys and dolphin in the studies. Smith

and his co-researchers point out that by using the same metacognitive paradigms broadly across species, scientists may be able to draw the map showing which species have evolved cognitive self-awareness. This could reveal when in evolution reflective cognition emerged and how widespread this capacity is among animals.

An important feature of the publication of the article is that 21 commentaries on the research by many of the world's most distinguished scientists in the areas including comparative psychology, developmental psychology, human cognition and philosophy will be published simultaneously. A detailed response to these commentaries by the researchers also will be published in the same issue of *The Behavioral and Brain Sciences*.

ScienceDaily, December 2, 2003

Fuente: www.primate.wisc.edu/pin

4. LA APE INFORMA

4.1. EL RINCÓN DE LA SECRETARÍA

De acuerdo con los datos que figuran en la tesorería, la APE cuenta con 153 socios, el 74% de los cuales está al corriente de los pagos. Cursan baja por falta de pago los socios número 24, 34, 40, 80, 130, 169, 205 y 219; y por baja voluntaria los socios 211, 240 y 241.

Se recuerda a los socios que para ser beneficiario de la cuota reducida es necesario presentar anualmente la acreditación de estudiante. El plazo de presentación de dicha acreditación tiene como límite el 20 de marzo. En caso de que en la citada fecha no haya sido presentada, se aplicará automáticamente la cuota regular.

Victoria Hernández Lloreda

4.2. EL RINCÓN DE LA TESORERÍA

El saldo correspondiente a la cuenta de la Asociación Primatológica Española asciende a 3.713,92 euros (617.944 pts), quedando pendiente de aprobar el informe de estado de cuentas del 2003 y la aprobación del presupuesto para el 2004 para la próxima reunión de Junta Directiva.

Araceli Díaz Carreras

...damos la bienvenida a Yvan Lledo Ferrer, Eva Blanch Torres y Borja Fdez. Fdez. de Luco

... *quién sabe dónde*: Montserrat Pertegal Ruipérez, Ana Pérez Pérez, Ana M. Queralt Fontanals, Francisco José Gómez Marín, Marina Martín-Artajo Rueda, Carles Riba Campos, Jaime Colomer Fornells, Carmen Vidal Marsal, Anna Castellano Blasco, Leire Corta González, Miguel Fernández Lloréis, Laura Peñate Mira, Sergio Fernández Blázquez, Lorena Aguirre Cadalso, Victoria Gutiérrez Diego, Patricia Teixidor Monsell, Caterina Carreira Nogueira Casanova, Samuel Fernández Carriba, Rosario García Cordovilla, M^a Elvira Fernández Fernández, Samy Otero Herrero, Fernando Martínez Turmo, Graig Standford, Lola Castaño Linares, Sonia Sánchez Sánchez, Carlos Bonet Betonet, Cintia Refojo Seronero, Ana Álvarez González, Ana García de Polavieja Embid, Isabel Solaz Madrid, Laura Serra San Félix, Baucis Mitjanas Beteta, Diego Lluvia Genique, Patricio Abdala Sepúlveda, Gema Hernández Molina, Ana M^a Fidalgo de las Heras, José Anaya Ruiz, Inmaculada Clua Ros, Montserrat Ponsá Fontanals, Santiago Joaquín de Laiglesia Gil. Marina Llorente Caño

5. NOVEDADES EDITORIALES

AGING OF ORGANISMS, Edited by Heinz D. Osiewacz

- × THE ASYMMETRICAL BRAIN, Edited by Kenneth Hugdahl and Richard J. Davidson
- × THE BIOLOGY OF TRADITIONS: MODELS AND EVIDENCE, Edited by Dorothy M. Fragaszy and Susan Perry
- × FIELD AND LABORATORY METHODS IN PRIMATOLOGY A Practical Guide, Edited by Joanna M. Setchell and Deborah J. Curtis
- × GENETIC AND CULTURAL EVOLUTION OF COOPERATION, Edited by Peter Hammerstein
- × GORILLA BIOLOGY: A MULTIDISCIPLINARY PERSPECTIVE, Edited by Andrea B. Taylor and Michele L. Goldsmith
- × MONOGAMY: MATING STRATEGIES AND PARTNERSHIPS IN BIRDS, HUMANS, AND OTHER MAMMALS, Edited by Ulrich H. Reichard and Christophe Boesch
- × NUTRIENT REQUIREMENTS OF NONHUMAN PRIMATES Reviewed by Mary Ellen Goldberg BS, VMT, LAAS
- × OCCUPATIONAL HEALTH AND SAFETY IN THE CARE AND USE OF NONHUMAN PRIMATES
- × PHEROMONES AND ANIMAL BEHAVIOR: COMMUNICATION BY SMELL AND TASTE By Tristram D. Wyatt
- × POINTING: WHERE LANGUAGE, CULTURE, AND COGNITION MEET, Edited by Sotaro Kita
- × PRIMATES DE COLOMBIA (Spanish language text), by Thomas Richard Defler

- × PRIMATES:ORIGIN, EVOLUTION AND BEHAVIOR, Edited by: Joaquim J.Vea, Jordi Serrallonga, Daniel Turbon, Josep M. Fullola, David Serrat
- × PRIMATE PSYCHOLOGY, Edited by Dario Maestriperi
- × THE PRIMATE VISUAL SYSTEM, ed. by Jon H. Kaas, Ph.D
- × PRIMATES IN FRAGMENTS: ECOLOGY AND CONSERVATION, ed. by Laura K. Marsh
- × SEXUAL SELECTION AND REPRODUCTIVE COMPETITION IN PRIMATES NEW PERSPECTIVES AND DIRECTIONS , Edited by Clara B. Jones American Society of Primatologists, 2003
- × TARSIERS: PAST, PRESENT, AND FUTURE, Edited by Patricia C. Wright, Elwyn L. Simons, and Sharon Gursky

6. CONOCIÉNDONOS

6.1. CONOCE A UN PRIMATÓLOGO

Te invito cordialmente a que participes en esta sección, cuyo objetivo principal es dar a conocer el trabajo y las inquietudes de la comunidad primatológica a través de algunos de sus representantes. Si estás interesado, envíame tu colaboración: CV, una foto y algún comentario personal (opcional).

Celina Anaya Huertas, APE, Buzón 150. Facultad de Psicología, Universidad Complutense de Madrid, Campus de Somosaguas, E-28223, Madrid
(pssc0@sis.ucm.es)

Ricardo Mondragón-Ceballos

Nació en México D.F, el 9 de julio de 1956. Hizo la Licenciatura en Biología en la Universidad Autónoma Metropolitana (Unidad Iztapalapa) (México) en 1979. Posteriormente (1988) obtuvo el grado de Maestro en Psicobiología por la Universidad Nacional Autónoma de México con la tesis titulada: “Variaciones diurnas del aseo social en macacos cola de muñón (*Macaca arctoides*)”. En 2002 obtuvo el grado de Doctor en Neurobiología en la Universidad Nacional Autónoma de México, Centro de Neurobiología presentando la tesis: “Interferencias a conductas generosas en macacos cola de muñón: los atributos sociobiológicos de los actores y el dilema del prisionero extendido a *n* participantes”.

Desde 1978 comienza su experiencia en investigación en varios institutos mexicanos (Investigaciones Biomédicas y Mexicano de Psiquiatría) así como en otros países: Departamento de Antropología Física, Instituto Superior de Ciencias Políticas y Sociales, Lisboa, Portugal; Facultad de Psicología, Universidad de Liverpool, Reino Unido (Estancia sabática en el grupo de Psicología Evolutiva a cargo del Prof. Robin I.M. Dunbar); Departamento de

Ecología y Comportamiento Animal Deutsches Primatenzentrum Göttingen, Alemania , en colaboración con el Dr. Eckhardt Heymann.

Ha sido profesor de Biología de Campo, Seminario de Etología y Psicología Evolutiva en la Universidad Nacional Autónoma de México y de Seminario de Etología Cognitiva, Filogenia y Comportamiento de los Primates en la Escuela Nacional de Antropología e Historia (México, D.F.). Desde 1978 a la fecha ha participado en más de 80 Congresos, Simposios y Seminarios en varios países del mundo, dentro del área de la primatología, fisiología y etología, básicamente.

Obtuvo el Premio a la mejor tesis de Maestría en Psicobiología, 1988. (Universidad Nacional Autónoma de México) y el Tercer lugar en el premio *Constantino Pliego Ordoñez* por la asesoría de la tesis del M.V.Z. Carlos Gutiérrez Aguilar, 1991. (Universidad Nacional Autónoma de México).

Ha dirigido 12 tesis de Licenciatura (Biología, Psicología, Antropología y Veterinaria); 2 de Maestría (Psicobiología) y 1 de Doctorado en Antropología.

Miembro fundador y Secretario de la Asociación Mexicana de Primatología. (1987-1989)

Es Investigador Nacional nivel 1 dentro de Sistema Nacional de Investigadores de México

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Principales Líneas de Investigación:

- Diferencias sexuales en la cognición social y los comportamientos complejos de los primates no humanos.
- Competencia espermática y elección críptica en primates no humanos
- Stress social y eficiencia reproductora en primates no humanos
- Elección de pareja y estrategias reproductoras en humanos

Si quieres contactar con él sus datos son:

Dr. Ricardo Mondragón-Ceballos

Instituto Nacional de Psiquiatría “Ramón de la Fuente Muñiz”

División Neurociencias. Departamento de Etología.

Calzada México-Xochimilco 101 Col. San Lorenzo Huipulco, Tlalpan

México, D.F. 14370, México

Telf: (52-55) 5655-2811 ext. 193

Correo electrónico: rmc@imp.edu.mx

6.2. CONOCE UNA TESIS DE LICENCIATURA

Si te interesa que tu tesis aparezca en esta sección, envíame un resumen de aproximadamente un folio (fuente times, 10 puntos) y si quieres también alguna ilustración: Félix Zaragoza Cuesta, APE, Buzón 150, Fac. Psicología, Universidad Complutense de Madrid, Somosaguas, 28223, Madrid, España (pspscy4@sis.ucm.es)

RELACIONES SOCIALES ENTRE MACHOS ADULTOS E INDIVIDUOS INMADUROS EN UNA COLONIA MULTI-UNIDAD DE BABUINOS

Gema Martín Ordás

Director: Fernando Colmenares

Tribunal: Tomás Fernández, Félix Junco y Héctor Rifá

Fecha y lugar de lectura: Junio de 2003, Universidad de Oviedo

Calificación: Sobresaliente

En muchas especies, los padres contribuyen relativamente poco al cuidado de sus descendientes. Y esto es especialmente cierto en los mamíferos, donde la fertilización interna, la larga gestación y el período de lactancia predisponen exclusivamente a las hembras a cuidar de sus descendientes. En el caso de los primates no humanos, las relaciones entre los machos adultos y los inmaduros se producen con gran frecuencia, si bien, tales vínculos se caracterizan por una alta variabilidad tanto inter como intraespecífica en comparación con el

patrón homogéneo que las madres establecen con las crías. El rango de variación oscila entre el cuidado directo y la ignorancia y en ningún caso las categorías han de ser excluyentes, es decir, los machos pueden ser protectores con los inmaduros en determinadas situaciones, aunque en contextos agonísticos éstas pueden ser usadas como escudos. La teoría de la selección sexual y de la inversión parental ha sido el principal paradigma utilizado para explicar la heterogeneidad de dichas relaciones. Así, en los sistemas de apareamiento promiscuo, donde la certidumbre paterna es baja, los niveles de inversión paterna deben ser bajos; mientras que en los sistemas de apareamiento poligínicos, que están asociados a una mayor certeza paterna, los niveles de inversión paterna deben ser más elevados. Por otro lado, las relaciones entre los machos adultos y los inmaduros podrían explicarse como una estrategia de competición intrasexual, cuya expresión extrema sería el infanticidio, o como un proceso de selección intersexual en el que las hembras preferirían aparearse con aquellos machos que muestren una mayor afiliación con sus descendientes. El objetivo de este trabajo fue explicar las relaciones entre los machos adultos y los individuos inmaduros dentro del marco de la teoría de la selección sexual y de la inversión parental. Para ello se plantearon tres niveles de análisis:

- a- Un primer nivel empírico, donde se pretendió documentar las relaciones existentes entre los machos adultos y los individuos inmaduros en una población de primates no humanos (*Papio spp.*).
- b- En el segundo nivel se investigaron los posibles factores que podrían estar contribuyendo a la formación y mantenimiento de las relaciones entre los machos adultos y los inmaduros y se compararon éstas con las relaciones que las hembras mantuvieron con los inmaduros.
- c- El tercer nivel se centró en el establecimiento de relaciones entre los principios explicativos de las relaciones entre los machos adultos y los individuos inmaduros, y las teorías socioecológicas que se han propuesto para dar cuenta de las relaciones que tienen lugar en otros tipos de díadas dentro del sistema social completo.

El trabajo se realizó en dos períodos (76/77: N=39; 77/78: N=43) y la muestra objeto de estudio fue una colonia de babuinos integrada por dos subespecies (*Papio hamadryas* y *Papio cynocephalus*) con dos sistemas de apareamiento distintos: por un lado, unidades sociales poligínicas (uni-macho/multi-hembra) y, por otro, unidades sociales promiscuas (multi-macho/multi-hembra).

Los resultados de este estudio ponen de manifiesto que la cooperación, por un lado, y el control de la agresión y la enseñanza de las reglas, por otro, fueron componentes relevantes de las relaciones entre los machos adultos y los individuos inmaduros vinculados a su misma unidad social (emparentados y no emparentados). En el caso de las relaciones que los inmaduros establecieron tanto con los machos adultos como con las hembras adultas, la afiliación fue el elemento más importante de las mismas. Así, la comparación de las relaciones que exhiben los machos adultos y las hembras adultas con los individuos inmaduros muestra que la función cooperativa es asumida

principalmente por los machos, mientras que las conductas afiliativas y agonísticas tienen un papel más destacado en las relaciones en las que participan las hembras adultas. De las tres hipótesis que se sometieron a contraste, la que recibió más apoyo empírico fue la de la certidumbre paternal, es decir, los machos hamadriades presentaron una mayor tendencia a implicarse paternalmente mediante la provisión de ayuda a los inmaduros que los machos cinocéfalos, cuyo sistema de apareamiento genera más incertidumbre acerca de la paternidad.

6.3. CONOCE UNA POBLACIÓN

GIBRALTAR AND ITS MACAQUE POPULATION

Dr. J. Cortés. General Secretary & Research Co-ordinator of G.O.N.H.S.

Eric Shaw. Operational Director. Macaque Management Group.

THE TEAM

In direct contact with the Barbary macaques, there is a team of two, supplemented by two others on a part-time basis to assist cover at weekends. Their responsibility is to collect, prepare and distribute the food, and clean the sites. In effect they do a lot more, including the keeping of the macaque management database. This small team was added to last year by the recruitment of a Gibraltar Research Assistant to help in the collection of observational data, under a Gibraltar Government training scheme. The team is under the supervision of Eric Shaw who is responsible for overall logistics, staff matters, interaction with the Gibraltar Tourist Board, among other things. The arrangement is under contract to the Gibraltar Tourist Board who has overall responsibility for the Upper Rock Nature Reserve. Clearly the impression is that Gibraltar still considers the apes primarily a tourist asset. There is a sister contract between the GTB and the Veterinary Clinic, run by Mark Pizarro, for aspects of veterinary care.

Day to day work involves the preparation of the food - which is restaurant quality food, and the distribution thereof while sites are cleaned. The food is good, the quantities are around 0.6kg per animal per day, in excess of that recommended through experience at Daun (Germany), and includes fruit and vegetables, grain and seeds. The main feed is in the morning, with a supplementary grain and seed run in the early afternoon before the men, who are conditioned to hours that finish at 3pm, finish their eight hours work. We have presented proposals to employ staff after these hours and await a reply from the Tourism Ministry.

The clumping of food: here we have a number of factors that come into play - especially the lack of suitable, easily cleaned space, and the proximity of roads. There are plans to extend the feeding areas, tiled so that they can be cleaned, to shelter them from the sun, and to provide larger

areas of water. Detailed proposals were prepared in 2000 after a full survey of the sites. We are awaiting action. In the meantime, in those areas where we can because it is closed to normal traffic. We scatter grain over wide areas.

The wildlife operatives, under the direction of Eric Shaw - have taken on additional duties over the past few years in connection with the keeping of data. Working initially with researchers from abroad and with the Vet, a number of databases are currently kept by these men. A far cry from when the authorities didn't even know how many apes there were.

CONTROL MEASURES

Data are of several kinds. In collaboration with the vet a campaign to catch, microchip and tattoo all the animals commenced in 2000. About 140 animals have now been marked in this way. On catching the animals, data are collected which include a number of measurements, weight, distinguish marks, scars, dentition, etc. Blood samples are taken and the animals inoculated against a number of potential diseases. The samples are both for disease screening and genetic analyses. A separate database is kept on the population of the monkeys, providing the tattoo number, group, name, sex, birth year, mother, microchip number, death year and other notes. This list is updated daily if necessary and reviewed periodically and is of course flexible, drawing information from all monkey workers on the Rock.

A great deal of information is thus held at the moment - more and in greater detail than ever in the history of the Gibraltar "Rock Apes". This allows ever increasing scientific input into our management recommendations. It can make a contribution to knowledge of the species, and we can apply the results of workers elsewhere to try and understand what is happening with our monkeys - and to try and make the decision-makers understand this too.

THE POPULATION

The best estimate of the macaque population of Gibraltar in January 2003 is the "Gibraltar Consensus" as it is a consensus of all the available information coming from the different people working on the apes at that time.

The "Gibraltar Ape Consensus" January 2003:

Site	Total	Notes
Farringdon	22	
Anglian Way	36	
Pr Philip's Arch	46	

Middle Hill	65	27 culled since (<i>Caleta</i>)
Apes' Den	32	
	201	136 in public view

A number of animals were subsequently lost through culling and other causes, as we will see later. This spring there were 41 births, one was still born and another two died shortly afterwards

We are also able to look at the sex ratios at birth since 2000. The average over these four years is 44% males born overall, ranging from 64% males in 2002 to (apparently, some young still have to be sexed) only 22% males in 2003. This is largely due to the very high proportion of females born in Middle Hill this year, 11 females to 1 male. Using the generally accepted principle that the young of higher ranking females tend to be males does not explain this abnormally high proportion and one cannot help wondering whether the stress imposed by both high levels of trapping and investigator presence may have had any influence on this ratio. The births occurred before the recent cull so that disturbance due to this cannot have been a factor.

We are also able to provide data on the distribution of the sexes, and ages between the groups.

Looking at the sexes, we can say, for example, that the latest fission, at Anglian Way, occurred in the group with the largest number of females in proportion to males.

The overall sex ratio (male/female) is 0.99. The sex ratio of adults (over 5) is 0.66, and of immatures is 1.35. This excludes 2003 births. If these are added, the immature M/F sex ratio is 1.10, somewhat closer to the 1:1 ratio of the adults. There are more young mature females than young mature males recorded, probably as a result of culling operations where young "roaming" males have been removed.

We can also use our data to look at the age structure of the population and of the individual groups. In most cases, other than the very recent Anglian Way II splinter group, there is a clear distribution biased in favour of young animals, and a paucity of older animals, in both males and females, but in particular in males. This again probably reflects culling practices.

The overall adult/immature ratio is 0.77. For males it is 0.35 and for females it is 1.10. This makes overall immatures about 56.2% of the population.

Clearly culling is the single largest cause of mortality. If the culling figures are removed, the vehicles running over monkeys becomes the largest

cause of death (10 in nearly 4 years), with two females dying on giving birth and two adults killed in fights with dogs taken into the Nature Reserve by their owners.

HOME RANGES/WANDERING:

The population of the Gibraltar apes in January this year consisted of 5 groups ranging in size from 22 to 65, with the latter, at Middle Hill, showing signs of fission. At this time, following fission of Royal Anglian Way and culling of part of a Middle Hill splinter, there are 6 groups, ranging from 14 to 46 individuals (plus this year's babies).

This issue, and that of home ranges, is one that is of particular interest in Gibraltar, when the main negative publicity - and hence the main, often direct, cause of culling - occurs when the apes enter built-up residential areas. The cause of these wanderings is invariably seen by the general public as proof that "the apes" are not being well looked after", and that "the apes are starving". Issues such as group size and stability/instability, fission and a natural home range do not enter the public perception.

There are several main reasons that can initiate the entry of the apes into built-up areas. One can be group fission, with the splinter group looking for other areas over which to range. If the splinter group is prevented from accessing provisioned food, this venturing into new areas may indeed be in search of a reliable food source (not that wild macaques are accustomed to reliable food sources). It is unlikely however that fission can be prevented, unless there is extreme and unacceptable interference in the macaque population, of the type experienced in the 1940s and 1950s. Whether it is triggered off by male aggression or female initiated, if the main cause is likely to be overcrowding, then fission at some time in the Gibraltar groups is to be expected. Reduction in food is unlikely to be a cause in the present regime. However, there is a human-related factor that may have been at least partly the cause of fission in Gibraltar on at least two occasions, on the creation of the Prince Phillip's Arch Group and Anglian Way II. That is the creation by tour operators of an additional feeding site some distance from the "official" provisioning site, whereby some animals spend increasingly more time at the new site while others remain at the original provisioned site, leading to an artificial division in the group becoming permanent.

It is generally accepted that Barbary macaques move more at times of lower food availability. This has been used by some as an argument to prove that the Gibraltar macaques roam due to poor provisioning. Well apart from the fact that the provisioning in Gibraltar we would consider to be at least adequate, we must look at the scale that we are considering.

Gibraltar's total size is 580ha, with the Upper Rock Nature Reserve covering only 195ha. The home ranges of the individual groups range from about 1 ha for Apes' Den to about 20ha for Middle Hill at the height of its

population (65) when it was in the process of fission and took on the Caleta area as part of its own. These figures are low for the species and probably this low due to provisioning and avoidance of overlap of the groups.

Natural food is a sizeable component of the diet of the Gibraltar Barbaries, especially during the wet seasons, although more close study of this is called for. The wanderings of the Gibraltar macaques are consistently more marked at the beginning of the dry season and in autumn.

The group least prone to wanderings in Gibraltar is the Apes' Den pack. This has been attributed in the past to over-feeding by tourists, which may be the case. However, the other traditional tourist fed group, the Farrington's group, is one of the ones that most wanders, with its movements similar (though in a different direction) to the Middle Hill group. The fact that both groups are at the northern end of the Rock with no other groups north, west or east of them respectively may be significant. Similarly, Anglian Way II has found no groups to the south and is expanding its range in that direction. Why Apes' Den has not found the botanical gardens just 100 metres from the base of its cliff is not clear.

What is clear is that wanderings of the apes have happened for hundreds of years. While there is now provisioning, it is also true to say that there have been major changes in the habitat of the Upper Rock during this time. A dense scrub has developed effectively reducing available ground habitat to roadsides and firebreaks, apart from the cliffs. Indeed the movements of the apes are usually either along rocky ridges, cliffs or road and never in the dense scrub. This reduction of available space also has to be considered as a factor in inducing movement of groups.

INTERACTIONS WITH VISITORS

So far, the impression may be that the Barbary apes of Gibraltar are allowed to live their lives in peace, on rocky ridges similar to the Algerian mountains, only having to worry about choosing between a provisioned apple and a periwinkle flower. Nothing can be further from the truth. The impact of visitors on their behaviour cannot be underestimated, and has been the subject of considerable study over the past few decades. The potential effect of interaction on disease transmission in both directions, and the undesirability of the apes eating chocolates and crisps, has been widely stated. Another problem is their loss of fear of Man, making them prone to become aggressive when they don't get the food they expect and making them prone to seek out Man, its provider, entering homes and shops.

It is established that the response of the Barbary macaque to variations in food availability varies between groups and times of year and is flexible. It would appear that in general the Gibraltar macaques maximise their feeding time as long as there are tourists to feed them. The potential disruption of social activity, and possibly in-group cohesion cannot be dismissed, even to

the point of considering whether, in fact, the macaques consider interaction with visitors comparable to social activity within the group. It also makes them bite. Bite statistics are difficult to keep as not all of them are reported, but the figure for 2000, for example, was of 150 reported

All this is illegal, as feeding of the apes, other than the official provisioning, is prohibited by Gibraltar law. Apart from the tourists, there are individuals who, convinced that the monkeys are undernourished, regularly go up onto the Rock to feed them whatever wherever, making the task of management all the more difficult.

Disease transmission is another point to be considered. Recently there was a Herpes B scare in Gibraltar. False positives led to an increase in activity in an attempt to minimise monkey/human contact. GONHS spearheaded an effort by volunteers to warn tourists of the dangers of feeding the apes, which got good media coverage and began to have positive results. These are now in question due to the failure of the Police to back up our reports of feeding.

THEIR IMPORTANCE

The Barbary Macaques of Gibraltar are one of the Rock's most important assets. Not only do they bring millions of visitors to the Rock - where the visit to the apes is undoubtedly the highlight. They create a great deal of publicity for the Rock throughout the world. Over the past four years at least 15 TV crews from at least 6 countries have made documentaries about the apes on Gibraltar.

Gibraltarians are proud of them, and of the fame that they bring upon their home, as long as they are not in their kitchen or bouncing on their cars. Visits to built-up areas make them unpopular and bring about much pressure from the general public on to the Government. The decision then becomes a political one and scientific and conservation considerations only make up a small part of the considerations. The recent cull of 27 macaques at Catalan Bay is an example. There is no doubt that these animals were causing a nuisance. There is no doubt that they were being fed by residents and tourists. And there was a great deal of feeding on natural foods. There is no doubt that they were important research animals. Attempts were made to keep them at Middle Hill, 300m above on the top of the cliff, by increasing food, even by feeding biscuits and crisps. They were repeatedly chased away. They kept coming back. They got killed. Almost complete matriline were removed, many of them belonging to focal females.

The worst part about this was the removal of the animals almost on a "first come first served" basis, except that babies and their mothers were spared. No account was taken of social structure, rank, or whether or not they were focal animals.

So here we can see the potential direct conflict between Gibraltar being a credible site for scientific research and the management of the population based on other considerations.

The purpose of the Gibraltar Barbary Macaque Project is to bring together all those with an interest in the Gibraltar macaques, research, management, conservation, so that management processes can be consistent with scientific needs, with the needs of the animals in our care, with the reasonable, respectful access to tourists, and with the development of the Gibraltar team to be able to provide data when required. It is a fact that none of the data that I present here would have been available five years ago, and what was available was prepared by visitors who sadly would have no continuous presence on Gibraltar, where all that information must rest.

Future culling to such an extent should be avoided by careful scrutiny of macaque behaviour and group composition to try as much as possible to predict possible fission and home range extension. Tools to act include contraception - which has recently been started by Mark Pizarro - and culling of certain individuals. Efforts to locate possible areas for exportation of splinter groups should continue. When culling is to be carried out all the genetic information must be to hand and details of any study animals readily available to GONHS so that accurate advice can be given.

The research base of the project needs to be further expanded. Our centre at Bruce's Farm is still able to accommodate more work and our developing library at the Botanic Gardens aims towards a complete collection of publications on the species. Research should not just be led by what happens to be in vogue in Primatology, which is why research projects are agreed upon by the German Primate Centre and GONHS. Our own needs here include genetic work, activity budgets, human-macaque interaction considerations, demography, ecology, behaviour in particular in relation to home range and group fission. It will be particularly interesting if, as we hope, tourist-monkey interaction decreases with law enforcement, to monitor changes in the behaviour of our macaques.

ECONOMIC ASPECTS

I have said several times that the apes are important to Gibraltar. But what are the real financial benefits? Let us first look at the number of visitors - nearly 800,000. If you think about it, that's nearly 6000 visitors per monkey per year, or 16 per day, stroking you, feeding you, wanting you to jump on their shoulder. Transformed into money, it makes up about £170,000 a month, or an average of around £2 million a year. That is equivalent to about £10,000 revenue per monkey or £28 pounds per monkey per day. The money provided to keep the monkeys in the current system is about £450 per monkey per year, or £1.23 per day.

THE FUTURE

So what are our other aims for the future?

We would like to see, finally, the improvement of the provisioning sites, with water supplied to all of them, enlarged feeding areas protected from direct sunlight, enlarged watering areas.

Ideally the population should be reduced closer to what the natural carrying capacity of the Rock is. This is unrealistic as provisioning is here to stay, as are the tourists, and if this vulnerable species can be found in higher numbers in Gibraltar, without being a nuisance to people or the ecology (and there is some impact on endemic flowers), then that should be acceptable.

But the management structure needs to change.

Over the past four years we have seen the whole operation develop beyond recognition. The feeding and cleaning regime is improved, the data collection established, the research base developed. But other arrangements around the management of the Rock apes have remained static and not adapted. Thus we still envisage day to day problems with such basics as availability of vehicles, provision of showers for the staff, confusing lines of communication. This is unacceptable now, and will become even more unacceptable as our programme marches on. The authorities must come to understand and respect the increasingly professional role that our organisation is taking in the management of these animals. The Gibraltar Tourist Board, part of the Ministry of Tourism and Transport, is ultimately responsible for the management of the Barbary Macaques of Gibraltar. As a tourism organisation, it is run by professionals who do a great deal to promote tourism in Gibraltar.

But the Barbary macaques are part of our ecology, part of our natural environment. While being a tourist attraction, they are members of our wildlife first, tourist attractions incidentally. How and why they first came to Gibraltar we shall probably never know. Why their numbers were boosted in the 1940s we do - not for tourism, but for military morale at a time of war. If they are to remain assets to the Gibraltar economy and to science they must be looked at from another perspective.

We propose that the management of the Gibraltar Barbary Macaques become the responsibility of the Ministry for the Environment, with input of course from the Tourist Board, but with the ultimate responsibility lying with Environment.

We propose an enhanced Gibraltar based team which will allow expansion of the feeding regime, wardening to ensure law enforcement, and increased collection of observational data. This structure should continue to link with the German Primate Centre and other institutions through the Gibraltar Barbary Macaque Project and encourage visiting researchers, with a

two way open exchange of information to enhance the ability to take and enforce management decisions.

We want to ensure that our Barbary Macaques are respected, and that our programme is respected by the scientific and nature conservation community.

On the eve of the 300th anniversary of the existence of Gibraltar, and the who knows what anniversary of the arrival of our monkeys, I can say, on behalf of the whole of the GONHS team, that we are committed, seriously committed to the future of the Barbary Macaques of the Rock.

Note : This article is a summary and will be published in its entirety in the Minutes of the Gibraltar Calpe Congress, 2003.

7. AGENDA

7.1. SE CELEBRARÁ

IACUC

Fecha: February 17, 2004

Lugar: Wyndham Dallas Market Center, Dallas, Texas

Organiza: The University of Texas Southwestern Medical Center, NIH Office of Laboratory Animal Welfare

Foco: IACUC 101 is a full day didactic and interactive training course for new as well as seasoned IACUC members, IACUC affiliates including IACUC administrators, trainers, veterinarians, animal care staff, researchers, regulatory personnel, individuals responsible for their institution's animal care program and others interested in IACUC roles and responsibilities. The program is delivered by a top-notch faculty renowned for their expertise in institutional animal care and use issues and program development including representatives from both private and academic biomedical research institutions as well as the AAALAC, USDA and OLAW. The morning and early afternoon sessions will provide a basic yet comprehensive overview of the laws, regulations, and policies that govern the humane care and use of laboratory animals supplemented with examples and possible approaches for successful and effective administration. Current available resources to help IACUCs keep abreast of the latest information as well as take advantage of networking opportunities will also be covered. The materials and information provided during the course will be applied during the later afternoon session when students will be challenged to consider, deliberate and develop action

plans for a variety of potential IACUC scenarios. Students receive an extensive resources manual as well as copies of relevant laws, regulations, policy and guides.

Contacto: Shari Hunt, UT Southwestern, IACUC, 5323 Harry Hines Blvd, MAIL CODE 9107, Dallas, TX, Tel: 214-648-5160, Fax: 214-648-5560

: Shari.Hunt@utsouthwestern.edu

Website: http://grants1.nih.gov/grants/olaw/UTSouthwestern_2004.doc

“THE IMPORTANCE OF BASIC RESEARCH, APPLIED PROJECTS, AND THE ANTHROPOLOGICAL PERSPECTIVE IN THE STUDY OF NONHUMAN PRIMATES”

Fecha: March 25, 2004 - March 27, 2004

Lugar: Northwest Anthropological Conference (NWAC), Eugene, OR

Organiza: Northwest Primate Conservation Society (NWPCS)

Foco: SYMPOSIUM ABSTRACT Whether developing cross-species models of behavioral and ecological adaptations, or implementing conservation strategies, primatologists are increasingly integrating the methods and ethical considerations from the various sub-fields of anthropology in their research. This symposium will explore the diversity and scope of primatological research conducted by anthropologists in the Pacific Northwest. Participants will strive to place their original, primate-related research within the broader context of an anthropological perspective. Presentation topics may include: basic research in captive or field settings, applied conservation projects, the treatment and use of nonhuman primates in society, ethnoprimateology, and innovative applications of the comparative approach. Presentations will be no more than 20 minutes, and ideally about 15 minutes with 5 minutes left for questions. Invited discussants will synthesize the presentations and evaluate the role of primate studies in understanding human evolution, comparative behavioral ecology, and the historical and/or cultural basis for current patterns of human interaction with our closest living relatives. Deadline January 25, 2004

Contacto: Nicholas Malone, Department of Anthropology, University of Oregon, Eugene, OR,

Correo-email: nwpcs@darkwing.uoregon.edu

Website: <http://www.primr.org/IACUC04/IAoverview.htm>

THE DIVERSITY OF ZOO PRIMATE RESEARCH

Fecha: March 29, 2004 - March 30, 2004

Lugar: Paignton Zoo Environmental Park

Organiza: Primate Society of Great Britain Meeting

Foco: 'The diversity of zoo primate research' will be the theme for the first day of the meeting. We aim to illustrate how zoos provide a unique resource for primate research through the presentation of data collected in zoos, on such diverse issues as behaviour and cognition, nutrition and physiology and applied research, including topics in conservation and housing and husbandry. We hope to publish the papers presented during this session. Deadline January 30, 2004

Contacto: Dr Vicky Melfi, Research Associate, Paignton Zoo Environmental Park, Totnes Road, Paignton, Devon, UK, Tel: 01803 697514

e- mail:

Vicky.melfi@paigntonzoo.org.uk

Website: www.psgb.org

8. TABLÓN DE ANUNCIOS

OFERTAS DE TRABAJO

Para más detalles consultar: Primate-Jobs

<http://www.primate.wisc.edu/pin/jobs/listings-avail.html>

Wisconsin Regional Primate Research Center, University of Wisconsin, Madison

Professional

- Clinical Veterinarian – LABS of Virginia, Inc.
- Research Assistant – Thomas Jefferson University
- Research Assistant – Thomas Jefferson University
- Manager, Animal Facility Operations – VOLT LIFE SCIENCES on behalf of leading Research Institution

- Animal Resource Facility Manager - San Diego, California – Client of Work wonders Staffing

Animal Care/Laboratory Tech Positions

- Veterinary Technician – Labs of Virginia Inc.
- Laboratory Technician – Wake Forest University Health Sciences
- animal caregiver – Jungle Friends Primate Sanctuary

Field Position

- Field assistant – Centre for Research and Conservation; Royal Zoological Society of Antwerp
- Field Assistant – Max Planck Institute for Evolutionary Anthropology
- Field assistant – Vocal behavior of spider monkeys in northeastern Ecuador
- Field Assistant – Sue Boinski

Educational Programs, Internships, Field Courses

- MSc Programme in Primate Conservation – Oxford Brookes University
- Residency Training in Laboratory Animal Medicine – University of California, Davis
- Summer Apprentice – Chimpanzee & Human Communication Institute
- Field course in animal behavior – Zoo Atlanta
- Student Internship – Southwest National Primate Research Center
- Intern – Center for Great Apes

Volunteer

- Field assistant volunteer – Wakuluzu: Friends of the Colobus Trust
- Volunteer manager – Chimpanzee Conservation Center
- Primate Keeper – Gibbon Conservation Center (GCC), Alan Mootnick, Director
- New World Primate (Marmosets, Tamarins, Capuchin)Caretaker/Office Assistant – Pacific Primate Sanctuary, Inc.

MUERE EN BARCELONA 'COPITO', EL ÚNICO GORILA ALBINO DEL MUNDO

Copito de Nieve, el único gorila albino del mundo, ha fallecido en el Zoo de Barcelona, después de que los veterinarios y especialistas que lo atendían le practicaron la eutanasia, con el fin de evitar una «agonía extremadamente dolorosa». El animal padecía cáncer de piel. La «difícil» decisión, según el presidente del Zoo de Barcelona, Jordi Portabella, se ha tomado tras evaluar el estado del gorila albino y ante la evidencia de que había entrado en un proceso de agonía irreversible. El gorila se encontraba desde el pasado miércoles fuera de la exposición al público, después de que en los últimos días hubiera empeorado su salud, ya que había perdido más de 10 kilos, se había agrandado la herida causada por el tumor que tenía bajo la axila y apenas se relacionaba con el resto de gorilas. Desde ese día, y después de que se publicara una foto en la que se veía la herida sangrante de su axila, el Zoo corrió las cortinas de las habitaciones exteriores del recinto donde vivía el gorila para evitar crear una excesiva expectación sobre el mal estado en que se encontraba. Un equipo de especialistas médicos de prestigio, pertenecientes a centros sanitarios como el Hospital de la Vall d'Hebrón, el Instituto Guttmann o el Instituto Barraquer, se han encargado en los últimos años, de forma altruista, de cuidar de la salud del gorila albino.

Martes, 25 de Noviembre de 2003 El mundo