

Oznaka poročila: ARRS-RPROJ-ZP-2013/279



ZAKLJUČNO POROČILO RAZISKOVALNEGA PROJEKTA

A. PODATKI O RAZISKOVALNEM PROJEKTU

1. Osnovni podatki o raziskovalnem projektu

Šifra projekta	Z6-3676
Naslov projekta	Savanski šimpanzi in evolucija človeka.
Vodja projekta	32007 Maja Gašperšič
Tip projekta	Zt Podoktorski projekt - temeljni
Obseg raziskovalnih ur	3400
Cenovni razred	A
Trajanje projekta	05.2010 - 04.2012
Nosilna raziskovalna organizacija	481 Univerza v Ljubljani, Biotehniška fakulteta
Raziskovalne organizacije - soizvajalke	
Raziskovalno področje po šifrantu ARRS	6 HUMANISTIKA 6.03 Antropologija 6.03.01 Fizična antropologija
Družbeno-ekonomski cilj	13.01 Naravoslovne vede - RiR financiran iz drugih virov (ne iz SUF)

2. Raziskovalno področje po šifrantu FOS¹

Šifra	5.04
- Veda	5 Družbene vede
- Področje	5.04 Sociologija

B. REZULTATI IN DOSEŽKI RAZISKOVALNEGA PROJEKTA

3. Povzetek raziskovalnega projekta²

SLO

Zahodno-afriški šimpanz (*Pan troglodytes verus*) je na rdečem seznamu ogroženih vrst, ki je bila v zadnji dekadi močno zreducirana. Mednarodna zveza za zaščito narave IUCN meni, da je senegalska populacija, ki je omejena na regijo Kédougou, potisnjena na mejo preživetja. Zadnji uradni program

zaščite je Senegal označil za »izjemno pomembno prednostno območje«, ki zahteva takojšnjo pozornost. Večina šimpanzov zavoljo intenzivnega krčenja gozda živi v majhnih izoliranih skupinah v tesni bližini okrepljenih populacij ljudi. Šimpanz in človek tekmujeta za gozdno okolje, vodo in hranljive vire, čeprav tradicionalni tabuji omejujejo lov in trgovanje z mladiči. Glede na pričakovane spremembe zaradi izkopavanja zlata in železa in sezonskega pritoka pastirjev v tej regiji je zaščita savanskih afn dosegla kritično točko. Poleg tega se šimpanzi na planoti Mandingue nahajajo na severnem robu razširjenosti vrste, v vroči, suhi in odprti pokrajini, ki je bila značilna v zgodnji evoluciji naših prednikov. Torej ta projekt prinaša tudi pomembne implikacije za razumevanje konteksta in izvora vedenja homininov, posebej gibanja po krajini, prehrabnenih prilagoditev in materialne kulture.

Raziskava je del projekta "Zaščita šimpanzov v jugovzhodnem Senegal: vpliv človeka", pod nadzorom dr. Pruetz. Bistven cilj je prepoznavanje konfliktov z ljudmi v okrožju Bandafassi in spodbuda za zaščito savanskih šimpanzov. Beležili smo vzorce gnezdenja in gibanja ter ključne vire prehrane vode, poudarili pa stike med šimpanzi in lokalnim prebivalstvom z uporabo etnoprimateoloških metod. Podatki o rabi habitata, gnezdenju, prehrani in demografiji izvirajo iz treh prednostnih območij in dveh obrobni con. Analize gnezdenja kažejo, da je gostota naseljenosti 0.09 šimpanzov na km², kar je izredno nizko. Vendar so pregledi terena pripomogli k boljši oceni senegalske populacije, ki šteje najmanj 500 posameznikov! Dodaten cilj je bil prepoznati sestavo študijskih skupin in njihove teritorije ter možnosti za genetski pretok tekom selitev samic. Od aprila 2010 naprej sem analizirala 257 zapisov prehranjevanja in 230 gnezdišč, šimpanze pa sem opazovala med 352 stiki. Povprečna velikost dnevnih skupin je bila 8.3 (SD 5.2), poglavitna dejavnost hranjenje (71.6%) in najpogostejša reakcija umik (48.1%). Šimpanzi so gnezdili na najmanj 55 vrstah dreves, a najraje na *Pterocarpus erinaceus* (27.4% gnezd), ki ga najpogosteje oklestijo nomadski pastirji. V repertoarju prehrane prevladuje sadje (72.3%), vključuje pa tudi redke snovi kot so zemlja, gobe, gomolji, polopice in netopirji (0.5%). Šimpanzi pri iskanju hrane tipično uporabljajo orodja, npr. paličice za lov na termite mravlje in nakovala za trenje baobaba. Izmed 63 prehrabnenih rastlinskih vrst, jih 21 jedo tudi ljudje pet ključnih virov komercialno izkoriščajo. Habitacije ne priporočam, kot alternative za zaščito savanskih šimpanzov pa predlagam trajnostno obiranje divjih plodov (za pravično trgovino), biovrtinarstvo in ekoturizem.

ANG

The western chimpanzee (*Pan troglodytes verus*) is found on IUCN's red list as highly endangered, recently facing a dramatic decline. The population in Senegal is considered as almost extinct, and limited to Kédougou region. The last official action plan from a decade ago has classified it as "an exceptionally important priority area" for chimpanzee conservation, which demands immediate attention. Most communities are isolated due to forest fragmentation and live in intense sympatry with expanding human population. Chimpanzees are competing with people over habitat, water, and food, although traditional taboos prevent hunting and pet-trade. Given the anticipated changes due to gold and iron mining, along with seasonal influx of sheep herds to this area, conserving savanna chimpanzees has reached a critical juncture. Additionally, apes of the Mandingue plateau live at the northern edge of species' distribution, in a savanna landscape (hot, dry and open) that characterized an important transitional period in human evolution. Therefore this research bears valuable implications for understanding the context and origins of early hominin behavior, particularly habitat-use, foraging adaptations and material culture.

The project is part of the »Conservation of chimpanzees in south-eastern Senegal: the human element«, supervised by Dr. Pruetz. The main objective was to identify conflicts with humans in Bandafassi arrondissement and provide the initiative for chimpanzee conservation. We recorded present ape communities, their key water and food sources, ranging patterns, and particularly chimpanzees' relation to humans via ethnoprimateological approach. Data on habitat use, nesting, feeding ecology and demography stem from three priority sites and two periphery zones. Nesting analyses show that the apes occur at a density of 0.09 individuals per km², which is extremely low. However, field surveys provided a better estimate for the current chimpanzee population, which numbers at least 500! Additional aim was to assess the composition and territories of study groups and their possibilities for gene flow via female transfer. From April 2010 on 257 feeding records and 230 nesting sites were analyzed, while apes were observed during 352 episodes. The

average party-size was 8.3 (SD 5.2), the prevalent activity was feeding (71.6%) and dominant reaction was retreat (48.1%). Chimpanzees used at least 55 tree species for nesting, but preferred *Pterocarpus erinaceus* (27.4% nests), which is most often pruned by nomadic shepherds. Food repertoire is dominated by fruit (72.3%), but it includes rare items such as soil, mushrooms, tubers, prosimians and bats. Apes regularly use tools in foraging for insects, baobab or tubers. From 63 plant species, eaten by chimps, 21 are consumed by people and five key foods are commercially exploited. Sustainable harvesting of resources (for fair-trade), bio-horticulture and ecotourism are suggested as conservation alternatives.

4. Poročilo o realizaciji predloženega programa dela na raziskovalnem projektu³

UVOD

Šimpanzi so naši najbližji živeči sorodniki in istočasno ena izmed najbolj ogroženih vrst na planetu. Izumrli so že v dveh afriških deželah, zahodna podvrsta (*Pan troglodytes verus*) pa se zaradi vpliva človeka sooča z drastičnim upadom (Humble *et al.* 2008). Mednarodna zveza za zaščito narave IUCN meni, da je senegalska populacija blizu izumrtja, nekje 200-400 šimpanzov pa živi le v regiji Kédougou (Kormos *et al.* 2003). Glede na pričakovane spremembe zaradi izkopavanja zlata in železa ter sezonskega pritoka pastirjev ovac v regiji, je zaščita teh primatov dosegla kritično točko. Poleg tega pa šimpanzi na planoti Mandingue bivajo na skrajnem robu razširjenosti vrste, v savanski pokrajini, ki je bila značilna v ključnem prehodnem obdobju naše evolucije. Torej moja raziskava prinaša tudi pomembne implikacije za razumevanje konteksta in izvora vedenja zgodnjih homininov, posebej gibanja v okolju, prehrambenih prilagoditev in materialne kulture (Harris *et al.* 2010).

Podobno kot druge velike opice, se savanski šimpanzi soočajo z dramatično izgubo habitata zaradi naraščanja prebivalstva in krčenja gozdov, ki jih spremljajo primeri krivolova in trgovanja z mladiči ter nevarnost prenosa bolezni. Posebno pa senegalske afne živijo v neposredni bližini lokalnih etnij in vrsti tekmujejo za iste vire preživetja (habitat, voda, hrana). Analize gnezdenja kažejo, da je gostota naseljenosti 0.09 šimpanzov na km² (Pruetz *et al.* 2002), kar je izredno nizko. Spodbudno pa med primati in ljudmi v Senegalu obstajajo mitološke in folklorne vezi in tradicionalni tabuji jima omogočajo sobivanje: zaradi njihovega edinstvenega položaja med primati lov na šimpanze skorajda ne obstaja. Inicijacijski obredi etnije Bedik npr. vsebujejo zgodbo o dečkih, ki se bojijo procesa (bitke z maskami zemlje), zbežijo v gozd in se sčasoma spremenijo v šimpanze. Medtem pa pripadniki etnij Fulani in Bassari verjamejo, da so šimpanzi starodavni ljudje, ko še niso poznali jezika, oblek ali ognja.

METODE

Pokrajina v jugovzhodnem Senegalu je ekološko marginalna za šimpanze, saj je skrajno vroča, suha in odprta (Pruetz & Bertolani 2009). Letno pade <800 mm padavin, deževna doba pa traja od junija do oktobra. Povprečna letna temperatura je 28.2 °C, ob koncu sušne dobe 36 °C, maximum doseže v maju (49 °C). Habitat je mozaik galerijskega gozda, bambusove in odprte dobrave, planot in pašnikov, prevladujejo pa odprti tipi. Najvišji vrh v regiji je gora Bagnomba (426 m), sveta v etniji Malinke, kjer biva tudi majhna skupnost šimpanzov ter predstavlja severno obrobje raziskave. Poudarjeno obdobje suše in sledeči močni nalivi imajo izrazit učinek na rastlinstvo, kmetijstvo in pašništvo pa prispevata k socio-ekološkim posebnostim regije.

Raziskava je del programa "Zaščita šimpanzov v jugovzhodnem Senegalu: vpliv človeka", pod nadzorom dr. Jill Pruetz, ki vključuje več projektov: 1. »izobraževalne delavnice« o vedenju šimpanzov, njihovi ogroženosti in zaščiti na vaseh v njihovi bližini« (D. Kanté); 2. »vpliv rudarstva na šimpanze« (K. Boyer) in 3. »konflikti med šimpanzi in ljudmi – možnosti ekoturizma« (MG). V prvi fazi smo stremeli k prepoznavi skupin šimpanzov in njihovega gibanja v okolici vasi Bandafassi, kjer so ti večkrat napadali koze. Vendar smo zaradi pomanjkanja vode v aprilu preiskali obširna področja na obeh straneh hribov in tako odkrili nepoznane skupine šimpanzov v

osrčju njihovega teritorija med goro Bagnomba, mestom Kédougou, parkom PNNK in sosednjo Gvinejo.

Natančno smo dokumentirali vzorce gnezdenja (Pruetz *et al.* 2002) ter ključne vire prehrane in vode, poudarili pa stike med šimpanzi in lokalnim prebivalstvom z uporabo etnoprimateoloških metod. Beležili smo tudi srečanja z večjimi sesalci in ljudmi, da bi ocenili prisotnost plenilcev, tekmecev in možnega ulova za šimpanze. Med iskanjem sledi smo se skušali približati subjektom sledeč standardnim metodam (Altmann 1974). Posebno pozornost smo namenili znakom *kulturnih inačic* (Whiten *et al.* 2001), ki pri nehabituiranih primatih vključujejo podatke o rabi preprostega orodja. Sestavo prehrane smo določili na podlagi opazovanj, sledi prehranjevanja in analize iztrebkov (McGrew *et al.* 2009). Označili smo tudi vse primere rabe jam/votlin (Pruetz 2007), medicinske rabe rastlin (Huffman 2001) in geofagije-uživanje prsti. Podatki o gnezdenju (ki odsevajo velikost dnevnih skupin) na tem obsežnem območju bi naj pripomogli k bolj natančni in aktualni oceni številčnosti populacije senegalskih šimpanzov. Dodaten cilj je bil prepoznati sestavo študijskih skupin in njihove teritorije ter možnosti za genetski pretok tekom selitev samic. Naš dolgoročni namen pa je vzpostava naravno-kulturnega turizma, ki bi lokalnim ljudem ponudil alternativne vire preživetja in hkrati spodbudil zaščito šimpanzov.

REZULTATI

Projekt zaščite savanskih šimpanzov je osnovan na sodelovanju z lokalnim prebivalstvom v okrožju Bandafassi (12°32'N, 12°19'W), kjer od aprila 2010 naprej zbiramo podatke o socio-ekologiji šimpanzov in posebej o odnosu med vrstama. V podrobno raziskavo so vključena tri prednostna območja: dve s konfliktom med vrstama (Bandafassi - BF in Angafou – AN: 12°34'N, 12°24'W) in »območje primerjave«, kjer smo odkrili večjo skupino šimpanzov (Nathia – NA: 12°29'N, 12°22'W). Na vsakem smo vzpostavili fenološko traso (1 km x 10 m), kjer na primeru 507 dreves sledimo produktivnosti savanske flore. S pomočjo GPS naprave smo označili ključne vire hrane za šimpanze, termitnjake in čebelnjake ter zbrali podatke o rastlinah, ki jih v razne namene uporabljajo domačini. Vzoredno beležimo aktivnosti šimpanzov na dveh prehodnih območjih (na obrobju narodnega parka Niokolo Koba in ob meji z Gvinejo Conakry), s ciljem prepoznave gozdnih koridorjev, ki omogočajo selitve samic v nove skupnosti in s tem izmenjavo genetskega materiala. Marewa npr. je območje bogato s palmami, ki na višku sušne dobe postane priljubljeno za pridobivanje palmovca. Potok s slapovi Ségou zmeraj nudi svežo vodo in galerijski gozd s sočnimi plodovi, ki jih drugače v savani ni (divji ananas in kokos). JGI iz Španije je na tem območju vzpostavila naravni rezervat, zato tam več nismo nadaljevali z raziskavo.

Do konca projekta smo identificirali 15 vasi s pomembnimi vodnimi viri in okleščenimi galerijskimi gozdovi, ki so najpomembnejši habitat za šimpanze in ljudi. Sistematično smo analizirali 240 gnezdišč in 277 območij hranjenja in oportunistično dokumentirali »šimpanzje vodnjake« v suhih strugah, skalna/zemeljska zavetišča ter različne primere rabe preprostega orodja. Kljub redkosti gozdnih zaplat (<5%) smo se opicam največkrat približali v zaprtih tipih habitata (galerijski gozd 34.7%, gozdne dobrave 33.5%). Prav ta habitat istočasno najbolj intenzivno izkoriščajo ljudje, posebej pastirji iz severa Senegala, ki v sušni dobi z ovcami preplavijo regijo Kédougou (Massa 2011). Poleg tega šimpanzi spijo na vsaj 55 vrstah dreves, a za gnezda je kot kaže priljubljeno drevo *Pterocarpus erinaceus* (27.4% od skupno 1031 gnezd), ki ga ti nomadi najbolj pogosto oklestijo (glej Massa 2011). Povprečno število gnezd enega najdišča je bilo 6.4 (razpon 1-22, SD=4.2). Podobno kot ob srečanjih, smo večino gnezd našli v zaprti dobri (41.5%), galerijskemu gozdu (41%), bambusovi in odprti dobri (vsak tip 7.9%), nekaj pa v travnati savani (1.8% gnezd).

Stiki s šimpanzi so bili relativno pogosti, vedenjski podatki (sestava skupin, aktivnost in odzivi na ljudi) pa temeljijo na 352 epizodah opazovanj. Povprečna velikost dnevnih skupin je bila 8.3 posameznike (razpon 1 – 26, SD=5.2): najbolj številne skupine smo srečali ob potoku AN

(povprečje 9.8), sledi NA (8.6), in najmanjše na območju BF (6 šimpanzov). Povprečen demografski profil je bil 3.9 samcev, 2.2 samici, 2.3 najstnikov in 1.8 mladičkov.

Tabela 1	VELIKOST DNEVNIH SKUPIN				GNEZDIŠČA : ODRASLI OSEBKI			
	total	Angafou	Bandafassi	Nathia	total	Angafou	Bandafassi	Nathia
Povprečje	8,3	9,8	6	8,6	6,4	7,7	4,3	6,5
minimum	1	1	1	2	1	1	1	1
maximum	26	22	14	26	22	22	8	15
SD	5,2				4,2			

Šimpanzi so se večinoma prehranjevali (71.6%), iskali hrano/potovali (skupno 18.6%), počivali (4.3%), pili (3.4%), gnezdili (1.1%) in ostalo (1.1% družabne aktivnosti). Njihov najpogostejši odziv na ljudi je bil umik (48.1%), a mnogo bolj izrazito v AN (62.5%), čeprav so sčasoma dopustili bližanje raziskovalcev. Šimpanzi so bili do opazovalcev precej pogosto brezbrizni (26.2%), a med območji so bile smiselne razlike (NA 44.7%, BF 25.3%, AN 19.7%, prehodna območja 18.8%). Študijske skupine so izražale precej manj strahu (NA 6.6%, AN 7.2%, BF 8.4%) kot šimpanzi na prehodnih območjih (31.3%). Sčasoma so nas začeli opazovati (skupno 12.8% odzivov) in kazati radovednost (posebej BF 19.3% in NA 14.5%), medtem ko so nas samo afne iz BF (10.8%) in AN (1.3%) »zastrahovale«.

V prehrani šimpanzov smo na podlagi opazovanj (48.1%), sledi (38.1%) in iztrebkov (13.8%) zaenkrat prepoznali 63 rastlinskih vrst iz najmanj 18 družin. Repertoar je tipičen za velike opice (72.3% sadeži, 2.3% oreščki, 5.6% stroki, 3.5% sredica bilk, 8.6% lubje, 2.3% listi, 1.2% cvetovi), vključuje pa tudi družbene žuželke (mravlje in termite v 1.8% zapisov), čebelji med (0.9%), zemljo/minerale (0.2%), in kot novost gomolje (npr. divji jam 0.8%), gobe (0.3%) in meso (polopice in netopirji 0.5%).

RAZPRAVA

Med divjimi rastlinami, ki jih uživajo šimpanzi, je 21 vrst takih, ki jih jedo tudi ljudje, in vsaj štiri ključne hranljive vire (*Adansonia digitata*, *Cola cordifolia*, *Saba senegalensis*, *Tamarindus indica*) izkoriščajo komercialno. Devet rastlin služi tudi senegalski tradicionalni medicini, med temi šimpanzi tri (tj. liste raznih figovcev) najbrž koristijo za zdravilne namene. Izmed prehrabnih in gnezdnih vrst je 16 takih, ki jih ljudje koristijo za razne namene (npr. gradnja, pohištvo, ritualne maske, vrvi, milo, kadila). Ti podatki kažejo, da je med savanskimi šimpanzi in ljudmi prisotna visoka stopnja tekomovalnosti za vire preživetja. Šimpanzi nad vasjo Bandafassi so zavoljo iztrebljene divjačine večkrat napadali vaške koze, ob potoku Angafou pa ropali pridelek v nasadu mangovcev, najbrž zaradi razmaha trgovanja z baobabom in *Sabo*, medtem ko so se v bližini parka nekajkrat lotili polj arašidov in vaških čebeljakov. Poleti 2012 so se žal začeli pregledi terena za izkopavanje zlata v bližini šimpanzov vasi Thiabedji na obrobju parka (glej zemljevid!). Ob reki Gambiji ljudje netrajno posegajo v okolje (npr. pridobivanje palmovega vina, sekanje rafije in bambusa, izkopavanje zlata) in kaže, da te sezonske dejavnosti vplivajo na gibanje šimpanzov, saj jih sočasno le izjemoma srečamo. Presenetljivo, da šimpanzi ob vasi Nathia pogosto spijo na talnih gnezdih, kljub prisotnosti plenilcev kot so hijene in šakali. Skupnost ima obširen domač teritorij (>60 km²), ki ga uporablja sezonsko glede na dostopnost hrane in vode, šimpanzi območja Angafou pa kot kaže redno prenočujejo v bližini potoka. Vse študijske skupine s tehnologijo tolčenja odpirajo plodove baobaba ter se na višku sušne dobe zatekajo v zemeljske votline, podobno kot edina habituirana skupnost savanskih šimpanzov v Fongoliju. V prvih 20 mesecih raziskave smo analizirali 8 kompletov rastlinskih orodij za lov na termite in mravlje, ter našli 4 lesene palice za izkop vodnjakov. Prepoznali smo tudi orodja za izkopavanje podzemnih plodov (dveh vrst gomoljev). Odkritja kažejo, da zahtevno savansko okolje spodbuja iznajdljivost med

našimi živečimi sorodniki. Podobne prilagoditve so bile najbrž prisotne tudi med zgodnjimi predniki človeka v obdobju prehoda na bolj odprte in raznolike krajine.

5. Ocena stopnje realizacije programa dela na raziskovalnem projektu in zastavljenih raziskovalnih ciljev⁴

Projekt Z6-3676 prinaša pomembne podatke o obstoječih skupinah šimpanzov okrožja Bandafassi in njihovem razmerju do ljudi. Poleg destruktivnega pritoka pastirjev ovac smo se srečali z različnimi spornimi situacijami med vrstama: kraja pridelka, povezana s komercialnim izkoriščanjem divjih plodov, napadi na drobnico, povezani z iztrebljeno divjačino, itn. Vsako območje odraža specifično relacijo do velikih opic, ki jo obravnavamo v sodelovanju z vaškimi starešinami in lokalnimi avtoritetami. Možne izboljšave sobivanja savanskega šimpanza s človekom so tako osnovane glede na dani kontekst v Senegal. Na vedenje šimpanzov močno vplivajo izkušnje z domačini, ki so ključni za zaščito divjine. Habitucije šimpanzov ne priporočamo, smiselna pa je določena toleranca do ljudi, kot osnova za naravno-kulturni turizem. Zaščito smo spodbudili s programom, ki vključuje tradicionalne običaje, povezane s primati (npr. incijacijski obredi etnij Bedik in Bassari) ter izlete v divjino, kjer lahko pod vodstvom gozdnih čuvajev srečamo šimpanze. Iz vsebinskega poročila je jasno, da brez truda in znanja senegalskih asistentov tega projekta ne bi mogli izpeljati, prav tako ne brez logistične podpore dr. Pruetz in mojega osebnega vložka (infrastruktura, mobilizacija, prehrana in bivanje itn.). Ta projekt pokriva najširše geografsko območje v Senegal (>500 km²), kjer pet terenskih vodičev nadzoruje ključna najdišča. Vzpostavili smo sistem »spremljanja šimpanzov« po vzoru projektov Janis Carter na vzhodu države in v sosednji Gvineji. Vpeljani ekovaruhi sledijo aktivnostim šimpanzov in istočasno omejujejo ropanje pridelka in napade na živino. Vse kaže, da je redna prisotnost asistentov na terenu »zajezila« lov na koze, podobno kot se je šimpanzje obiranje manga zmanjšalo. Srečanja z nomadskimi pastirji in lovci ter nezakonite aktivnosti v gozdu preko lokalnega agenta sporočamo oddelku Eaux et forêts Ministrstva za okolje. Nabor genetskega materiala za prepoznavo pripadnikov različnih skupnosti šimpanzov v Senegal je še zmeraj v teku na univerzi Cambridge. Zadnji pregledi terena so številčnosti populacije ocenili na najmanj 500 šimpanzov, Angafou in odkrita Nathia pa pomenita prednostna območja za zaščito savanskih šimpanzov (glej poročilo S. Ndiaye). V Nathi smo začeli tudi sodelovanje z Max Planck Institutom (študija s pomočjo kamer). Kot alternativno možnost zaslužka smo osnovali projekt ekovrtnarjenja in rabe zdravnih zelišč s pomočjo R. Dewa (slovenskega predstavnika GCAP). Ena od rešitev je vzpostavitev pravične trgovine, s poudarkom na trajnostnem obiranju divjih plodov, ki so zaenkrat predmet nebrzdanega izkoriščanja. Rezultate terenskega dela sem poleti 2011 predstavili lokalnim skupnostim, redno pa tudi na mednarodnih srečanjih EFP in IPS. Torej projekt je potekal v skladu z načrtom in predvidene cilje sem v celoti uspešno realizirala, daljnoročni cilj pa zahteva kontinuiteto in podporo tako v znanstvenem kot v finančnem smislu in je izven dometa tega poročila.

6. Utemeljitev morebitnih sprememb programa raziskovalnega projekta oziroma sprememb, povečanja ali zmanjšanja sestave projektne skupine⁵

Pri samem terenskem delu, ki sem ga izvedla samostojno v treh sezonah, sicer ni bilo bistvenih sprememb, žal pa kot vodja projekta nisem imela možnosti dejansko nadzirati ali celo predlagati porabe sredstev ARRS. In zato je prišlo do zapletov, zaradi katerih sem končno predstavitev rezultatov raziskave v Mehiki (in še marsikaj drugega) morala urediti in pokriti sama. Zato sem avgusta tudi pozvala k reviziji projekta na BF, ki pa še zdaj ni zaključena.

7. Najpomembnejši znanstveni rezultati projektne skupine⁶

Znanstveni dosežek			
1.	COBISS ID	2496335	Vir: COBISS.SI
	Naslov	SLO	Šimpanzi v okrožju Bandafassi, jugovzhodni Senegal

		ANG	Chimpanzees in Bandafassi arrondissement, Southeastern Senegal
Opis	SLO		Članek predstavlja rezultate prvih 15 mesecev dela na projektu s poudarkom na sobivanju šimpanzov in ljudi okrožja Bandafassi v Senegalu. Vključili smo vizijo terenskih pregledov v sodelovanju z domačini kot osnovo za trajnostno zaščito savanskih šimpanzov.
	ANG		The paper describes the results of the first 15 months of fieldwork with an emphasis on co-existence of chimpanzees and humans in Bandafassi Arrondissement, Senegal. We present a vision for the sustainable community-based conservation of savanna apes via field surveys.
Objavljeno v			Committee for the Care and Conservation of Chimpanzees, and the Mahale Wildlife Conservation Society; Pan Africa news; 2011; Vol. 18, no. 2; str. 1-5; Avtorji / Authors: Gašperšič Maja, Pruetz Jill
Tipologija			1.01 Izvirni znanstveni članek
2.	COBISS ID	2448719	Vir: COBISS.SI
Naslov	SLO		Terenska primatologi(n)ja
	ANG		Field primatology: a letter from Senegal
Opis	SLO		Spremna beseda h knjigi Kulturni šimpanz je nastala tekom raziskave v Senegalu pomladi 2011 in opisuje realne izkušnje na Afriškem terenu, ki so podlaga za vedo kulturne primatologije. Predstavila sem tudi neverjetna odkritja rabe orodij med savanskimi šimpanzi skupnosti Fongoli in zaplete pri izvajanju podoktorske raziskave.
	ANG		The text as a foreword for the book "The cultured chimpanzee" was written during the research in Senegal in spring 2011. It describes the actual experience from the African terrain, which is the basis for the science of cultural primatology. I also presented the exciting discoveries of tool-use among the savanna chimpanzees of the Fongoli community.
Objavljeno v			Studia humanitatis; Kulturni šimpanz; 2011; Str. 355-382; Avtorji / Authors: Gašperšič Maja
Tipologija			1.16 Samostojni znanstveni sestavek ali poglavje v monografski publikaciji
3.	COBISS ID	1510524	Vir: COBISS.SI
Naslov	SLO		Materialna kultura savanskih šimpanzov (P.t. verus) v Senegalu
	ANG		The material culture of savanna chimpanzees (P. t. verus) in Senegal
Opis	SLO		Prispevek obravnava osnovno tehnologijo (t.j. trenje baobaba, lov na mravlje in termite) savanskih šimpanzov (Pan troglodytes verus) v jugovzhodnem Senegalu in njen pomen za kulturno primatologijo. Rezultati so plod terenskega dela med 2004 in 2008, osredotočeni pa so na analize uporabljenih orodij (nakovala, rastlinske »sonde«) in vedenjske podatke iz skupnosti Fongoli. Opazovanja prve habituirane skupine šimpanzov v okolju, ki spominja na pokrajino, kjer so se razvili naši predniki, prinašajo nepričakovana odkritja za razumevanje evolucije človeka (posebej raba »sulic« za lov na polopice).
	ANG		The paper introduced the elementary technology (baobab pounding, termite-fishing, and ant-dipping) of savanna chimpanzees (P. t. verus) in SE Senegal and its relevance for cultural primatology. The results stem from fieldwork between 2004 and 2008, and are focused on tool analyses (stone anvils, plant probes) and behavioral data from the Fongoli community. Observations of the first habituated ape group in a habitat reminiscent of the landscape where our early ancestors evolved, provided unexpected findings for understanding human evolution (e.g. spear-use in hunting galagos and percussion).
Objavljeno v			Zavod RS za šolstvo; Organizmi kot živi sistemi; 2010; Str. 62-71; Avtorji /

	Authors: Gašperšič Maja
Tipologija	1.06 Objavljeni znanstveni prispevek na konferenci (vabljeni predavanja)

8. Najpomembnejši družbeno-ekonomski rezultati projektne skupine⁷

		Družbeno-ekonomski dosežek	
1.	COBISS ID	2666831	Vir: COBISS.SI
	Naslov	SLO	Šimpanzi in ljudje v okrožju Bandafassi, jugovzhodni Senegal
		ANG	Chimpanzees and humans in Bandafassi Arrondissement, South-Eastern Senegal
	Opis	SLO	V predavanju na XXI. mednarodnem kongresu IPS v Mehiki sem prikazala rezultate projekta Z6-3676: poudarila sem etnoprimateološki pristop k zaščiti savanskih šimpanzov v Senegalu in implikacije odkritij o prehrani, gibanju in rabi orodja za evolucijo človeka.
		ANG	The presentation at the XXIV. IPS congress in Mexico focused on results from my project Z6-3676: I emphasized the ethnoprimateological approach to conservation of savanna chimpanzees and the implications of my findings on feeding, ranging and tool-use for human evolution.
	Šifra	B.03 Referat na mednarodni znanstveni konferenci	
	Objavljeno v	The International Primatological Society; Primatology's legacy and future challenges; 2012; Avtorji / Authors: Gašperšič Maja	
Tipologija	1.12 Objavljeni povzetek znanstvenega prispevka na konferenci		
2.	COBISS ID	29049305	Vir: COBISS.SI
	Naslov	SLO	Možnosti sobivanja šimpanzov in ljudi v jugovzhodnem Senegalu
		ANG	The prospects for future co-existence of chimpanzees and humans in Southeastern Senegal
	Opis	SLO	Predavanje na IV. evropskem primatološkem kongresu v Lizboni je temeljilo na rezultatih raziskave tekom prvega leta terenskega dela v okrožju Bandafassi, Senegal. Predstavila sem aktualne sporne situacije med šimpanzi in ljudmi v savanski krajini in možnosti bodočega sobivanja dveh najbolj sorodnih vrst.
		ANG	The presentation at the IV. European congress of primatology in Lisbon was based on research results from the initial year of fieldwork in Bandafassi Arrondissement, Senegal. I described the current conflicts between chimpanzees and humans in a savanna landscape and explored the prospects for the future co-existence of the two most related primate species.
	Šifra	B.03 Referat na mednarodni znanstveni konferenci	
	Objavljeno v	Associacao Portuguesa de Primatologia; Diversity; 2011; Str. 59; Avtorji / Authors: Gašperšič Maja	
Tipologija	1.12 Objavljeni povzetek znanstvenega prispevka na konferenci		
3.	COBISS ID	256563712	Vir: COBISS.SI
	Naslov	SLO	Kulturni šimpanz
		ANG	The cultured chimpanzee
Opis	SLO	Prevod "Kulturnega šimpanza" pri založbi SH je prva primatološka monografija v slovenščini. Knjiga obravnava relativno novo področje šimpanzjih kultur in jih navezuje na druge antropološke discipline. McGrew predstavi obilico presenetljivih primerov živalskih kultur in se sprašuje o	

		prihodnosti kulturne primatologije kot dragocenega polja raziskav, ki bi naj pripomogle k boljšemu umevanju evolucije človeške kulture.
	ANG	The translation of »The cultured chimpanzee« is the first primatological monography in Slovenian language. The book tackles the new and exciting field of chimpanzee cultures and relates it to other disciplines of anthropology. McGrew presents many unexpected discoveries of non-human culture and the prospects for cultural primatology as a valuable field of inquiry as regards a better understanding of the evolution of human culture.
Šifra	D.04 Pobuda za uvedbo novega raziskovalnega področja v Sloveniji	
Objavljeno v	Studia humanitatis; 2011; 401 str.; Avtorji / Authors: McGrew William Clement	
Tipologija	2.01 Znanstvena monografija	
4.	COBISS ID	27462873 Vir: COBISS.SI
	Naslov	SLO Raba orodja med fongolskimi šimpanzi: gibanje po savanski krajini
		ANG Tool use by Fongoli chimpanzees (Pan troglodytes verus): navigating a savanna mosaic environment
	Opis	SLO Prispevek obravnava strukturo habitata, lokomocijo in telesno držo šimpanzov skupnosti Fongoli (Senegal), tipe orodij v rabi in kako tehnologija vpliva na njihovo aktivnost iskanja hrane in gibanje po krajini. Fongolski šimpanzi imajo raznolik repertoar uporabe orodij, vključno z lovskimi pripomočki, orodji za prehrano s termiti in mravljami ter kamnitimi in lesenimi nakovali za odpiranje trdih plodov. Njihova obsežna materialna kultura je povezana z relativno zahtevnim okoljem, v katerem živijo. Poleg tega smo prenašanje plodov baobaba med šimpanzi primerjali z vedenjem zgodnjih homininov.
		ANG The paper describes habitat structure, the postural and locomotor behavior of chimpanzees at Fongoli (Senegal), the types of tool use exhibited, and how technology fits into their daily time budget, foraging activities and travels. Fongoli chimpanzees exhibit various forms of tool use, including tool-assisted hunting, termite and ant feeding with tools, and opening hard-husked fruits on rock and wood anvils. Their extensive material culture can be linked to the relatively harsh environment in which they live. Further, chimpanzee transport of baobab fruits is associated with hominin behavior.
	Šifra	B.03 Referat na mednarodni znanstveni konferenci
	Objavljeno v	Nippon Reichäorui Gakkai.; Reichäorui kenkyäü; 2010; Vol. 26, suppl.; str. 594; Avtorji / Authors: Gašperšič Maja, Lindshield S., Tourkakis C., Wessling E., Pruetz Jill
	Tipologija	1.12 Objavljeni povzetek znanstvenega prispevka na konferenci
5.	COBISS ID	27607769 Vir: COBISS.SI
	Naslov	SLO Šimpanzi na robu: vpliv človeka v Senegal
		ANG Chimpanzees on the edge: human element in Senegal
	Opis	SLO Predstavitev temelji na prvi sezoni projekta »Savanski šimpanzi in evolucija človeka«, ki ga podpira ARRS. Osredotočili smo se na prepoznavo konfliktov med šimpanzi in ljudmi in iskanje spodbude za zaščito primatov na območju Bandafassi, JV Senegal. Odkrili smo preživele skupine šimpanzov, beležili njihovo gibanje (pregled gnezdenja) in dragocene vire (posebej vodo) ter razmerje do ljudi. Raziskava terena na obeh straneh hribovitega sklopa je nakazala prisotnost večih skupin šimpanzov (ob vasi Nathia, potok Angafou), večina jih tekmuje z lokalnim prebivalstvom za hranljive vire (koze, mango).
		The presentation was based on the first phase of the project »Savanna

	ANG	chimpanzees and human evolution«, supported by ARRS. We focused on identifying human-chimpanzee conflicts and providing incentive for conserving apes at Bandafassi, south-eastern Senegal. We traced the remaining chimpanzee populations in the area, documented their ranging patterns (nesting survey), and valuable resources (particularly water), along with their relation to humans. Field surveys indicated the presence of several viable chimpanzee groups (Nathia, Angafou), most competing with local people over food sources.
Šifra	B.03	Referat na mednarodni znanstveni konferenci
Objavljeno v	Slovene Anthropological Society; Hard reality of dream society - uses of anthropology in contemporary world; 2010; Str. 20; Avtorji / Authors: Gašperšič Maja	
Tipologija	1.12	Objavljeni povzetek znanstvenega prispevka na konferenci

9. Drugi pomembni rezultati projektne skupine⁸

1. J.W.K. Harris, S. Carvalho, T. Matsuzawa, W. McGrew, E. Visalberghi, L. Marchant, M. Bamford, D. Braun, A. Du, J. Pruetz, M. Gašperšič & L. Dibble. 2010. Contextualizing the Behavior of the Earliest Hominins: Inferences We Can Draw from Studies of Modern Environmental and Non-Human Primate Analogs. 13th Congress of the Panafrican Archaeological Association for Prehistory and Related Studies - PAA, and the 20th Meeting of the Society of Africanist Archaeologists - Safa. Theme: Preserving African Cultural Heritage. November 2010, UCAD II, Dakar, Senegal. Prispevek na konferenci (so-avtorstvo s paleoantropologi, arheologi in primatologi) žal ni objavljen. Predstavili smo inovativni interdisciplinarni pristop k razumevanju vedenja zgodnjih hominidov (posebej na območju Koobi Fora v Keniji), ki temelji na sodobnih ekoloških raziskavah in opazovanih primatov (poudarek na tehnologiji tolčenja, ki sem jo tekom doktorata proučevala med fongolskimi šimpanzi).
2. Predavanje o materialni kulturi savanskih šimpanzov z mednarodnega posveta Biološka znanost in družba 2010 je objavljen tudi na spletnih straneh World Summit Awards: http://videlectures.net/bzid2010_gaspersic_mksvs/
3. Decembra 2011 sem na oddelku za vodovja in gozdove Ministrstva za okolje in zaščito narave (Direction des eaux, forêts et chasses) v Senegalu dobila lastno dovoljenje za raziskavo (glej priponko). Pooblastilo mi omogoča samostojno spremljanje skupnosti savanskih šimpanzov v okrožju Bandafassi, regija Kédougou.
4. 2011 sem pridobila naziv asistent/raziskovalec za 3 leta.
5. Fongoli Savanna Chimpanzee Project in nevladna organizacija v Senegalu NEIGHBOR APE, katere del je tudi ta projekt, sta v letu 2012 pridobili stalno mesto na spletnih straneh National Geographic Society in Global giving! Glej blog: <http://savannachimp.blogspot.com/2012/11/bandafassi-area-chimpanzee-conservation.html>; <http://www.globalgiving.org/projects/conserving-senegals-chimpanzees-through-education>

10. Pomen raziskovalnih rezultatov projektne skupine⁹

10.1. Pomen za razvoj znanosti¹⁰

SLO

V smislu statusa populacije je pomemben rezultat projekta odkritje skupine šimpanzov ob vasi Nathia, ki je prejšnji pregledi senegalskega terena niso prepoznali (Pruetz idr. 2002, Carter idr. 2003). Pravzaprav smo našli šimpanzja gnezda in ostanke prehrane na vseh gozdnih predelih na obrobju parka, med goro Bagnomba in vasjo Bandafassi, enako ob reki Gambiji na meji z Gvinejo. Zadnje uradne ocene o številčnosti šimpanzih v Senegalu izpred dobre dekade so bile največ 400, torej je vsaka »nova« skupnost vredna pozornosti. Nova ocena pa ne pomeni, da je

živali več kot smo mislili, ampak da vemo (še zmeraj) premalo o njih in okolju, ki mu pripadajo. Relacije med ljudmi in afnami ter demografski podatki o slednjih so neprecenljivi za svežo raziskavo o stanju velikih opic, ki je delno že v teku. Etnoprimatološki pristop je bistven pri zaščiti primatov (Lee 2010), a skupen življenjski prostor s šimpanzi zahteva alternativne rešitve glede bodočih ekoturističnih projektov v Afriki (Hockings & Humle 2009; Macfie & Williamson 2010). Najbolj moteč element v tej raziskavi je bil pritok pastirjev ovac v regijo Kédougou in zanemarjanje zakona s strani senegalskega ministrstva za okolje glede njihovih ilegalnih dejavnosti. Krčenje gozdnega habitata prinaša uničujoče posledice za lokalno prebivalstvo in primata. Če bodo subjekti proučevanja izumrli, bo pod vprašajem tudi znanost o njih.

V kontekstu ekologije prehrane, ki je znana le iz edine habituirane skupine v Fongoliju (Pruetz 2006), so naši rezultati v repertoar savanskih šimpanzov dodali eksotične plodove, oreščke (predvsem palmovcev) in gomolje. Presentljivih odkritij kot je lov s sulicami (Pruetz & Bertolani 2007) še ni bilo, česar pa ni bilo pričakovati, saj taki podatki izvirajo iz mnogoletnih naporov habituacije. Pa vendar, šimpanzi vasi Bandafassi se zatekajo v skalne votline, najbrž iz termoregulacijskih razlogov na višku vročine (Pruetz 2007). Tehnologijo tolčenja in rabo kamnitih nakoval za odpiranje plodov opičjega kruhovca smo zasledili med vsemi študijskimi skupinami (Gašperšič 2008). Tekom raziskave sem analizirala 7 kompletov rastlinskih orodij za lov na termite *Macrotermes* sp., skupno 45 prožnih paličic s povprečno dolžino 36.3 cm. Manjše termitnjake smo v Nathi našli tudi raztreščene na jamskih tleh, poleg šimpanzjega vodnjaka pa so ležale 4 lesene palice, ki so jih najbrž uporabili za kopanje v suhi strugi. Februarja 2012 sem opazovala tudi zajemanje vojaških mravelj (*Dorylus* sp.) med šimpanzi in analizirala 15 lesenih orodij, ki so jih pustili za sabo (povprečna dolžina 78.7 cm). Spodbudno smo našli znamenja novega tipa materialne kulture v zahodni Afriki (nedavno odkritega v savanski Ugalli, Tanzanija; Hernandez-Aguilar idr. 2007): orodje za izkopavanje divjih gomoljev. Bolj toge palice (dolge približno 50 cm) smo našli trikrat, medtem ko jih je pri kopanju videl asistent SF Kanté. Podobno kot v Fongoliju se tudi šimpanzi skupnosti Angafou bojda radi namakajo v potoku, kar je ena od posebnosti savanskih opic. Vendar vsi ti primeri zaradi omejenega vzorca štejejo le kot anekdote (Sarringhaus idr. 2005) in zaenkrat ne morejo škoditi kot kulturne poteze, saj je za nabor dokazov potrebno precej več časa v bližini subjektov proučevanja. Kljub temu ta prva spoznanja o šimpanzih okrožja Bandafassi prinašajo presenečenja, saj so nekateri vzorci vedenja izredno redko dokumentirani, npr. lov na netopirje (poznani le med bonobi; Bermejo idr. 1994), ki gotovo zahteva določene spretnosti in razmišljanje. Kaže, da savansko okolje res spodbuja inovativne strategije med našimi sorodniki, njihovi odzivi pa so dovolj prožni za razvoj kompleksnih vedenj. Prilagoditve na savanski habitat pa vsebujejo implikacije za rekonstrukcijo širitve prvih homininov v krajine s podobnimi izzivi. Gnezdenje na priljubljenih območjih ter vračanje h ključnim virom vode in hrane ustvarja središčne točke v pokrajini in ponuja boljše razumevanje izvora domačih teritorijev v zgodnji evoluciji človeka.

ANG

In terms of species status an important finding from the project is the discovery of a chimpanzee community at Nathia, which was not detected in previous surveys in Senegal (Pruetz et al. 2002, Carter et al. 2003). In fact we found ape nests and feeding remains in all wooded areas along the periphery of the park, between Mt. Bagnomba and Bandafassi village, as well as along Gambia River close to Guinea border. The last official estimate about Senegalese chimpanzees from a decade ago was maximum 400, thus every »new« group is valuable and deserves attention. However, the new evaluation does not mean the chimpanzees became more numerous, it shows we do not know enough (yet) about them and their respective environments. Ethnoprimate approach has proved to be essential in primate conservation efforts (Lee 2010), although sharing space with chimpanzees needs a reassessment for future nature tourism projects with African great apes (Hockings & Humle 2009; and Macfie & Williamson 2010). The most disturbing element noted during this study was the influx of immigrant shepherders to Kédougou region and current non-enforcement of law by Senegalese Ministry for the environment as regards their illegal practices. The vanishing of forested habitat will bring devastating consequences for the local people and the primates that inhabit them. If savanna chimpanzees are extinct, no such science will be possible anymore. In respect to feeding ecology of savanna chimpanzees, known from the only habituated community at Fongoli (Pruetz 2006) our results added exotic fruits, nuts (particularly from palms) and tubers to their diet. No stunning discovery comparative to female "spear hunters" (Pruetz & Bertolani 2007) occurred yet, which is not surprising as such data emerged after years of habituation effort. However, Bandafassi apes use rock caves for feeding on baobab and resting, perhaps for thermoregulation during the maximum heat (Pruetz 2007).

Further, percussive technology or anvil use in foraging for baobab fruits (Gašperšič 2008) occurs in all study groups. During the project I analyzed 7 tool-sets for termite-fishing *Macrotermes* sp., in total 45 flexible plant probes with an average length 36.3 cm. Smaller mushroom-shaped mounds were though smashed on the ground of a cave, and beside chimp-dug wells at Nathia we found 4 wooden sticks that were likely used as digging tools. In February 2012 we also observed ant-dipping for *Dorylus* sp. and I analysed 15 wands left behind by chimps (average length 78.7 cm). Interestingly, we found signs of previously unknown type of tool use in West Africa (and only recently discovered in the Eastern savanna site of Ugalla; Hernandez-Aguilar et al. 2007): digging sticks to obtain tubers (USO). Stout sticks (app. 50 cm long) were found three times and digging behavior seen by our assistant SF Kanté. Similarly to Fongoli apes at Angafou supposedly like to soak in the stream, which is perhaps characteristic for savanna groups. As it is, all those examples count only as anecdotes thus far (Sarringhaus et al. 2005) and not as cultural variants, since much more time is needed in proximity of study subjects to collect needed evidence. However, preliminary findings from Bandafassi chimpanzees are somewhat intriguing, due to the rarity of detected behaviors such as hunting bats (seen only in bonobos; Bermejo et al. 1994) that surely demands significant skills and intelligence. It does seem that savanna milieu triggers innovative strategies in our closest relatives and their adaptations show foraging versatility, needed for the evolution of complex behaviors. Additionally, ape use of harsh arid habitat has implications for the reconstruction of early hominin diffusion with comparable ecological challenges. Nest-site reuse and repeated visits to water sources and prized food plants create focal points in the landscape and have clues for ranging behavior and the origin of home bases in early human evolution.

10.2. Pomen za razvoj Slovenije¹¹

SLO

Dolgoletno sodelovanje s priznanimi znanstveniki kot je Jill Pruetz (izbrana raziskovalka pri National Geographic Society 2008), Janis Carter (ki je ustanovila prvo zavetišče za šimpanze v zahodni Afriki: Baboon Islands v sosednji Gambiji, z nami pa sodeluje glede odnosov med šimpanzi in ljudmi ter pomaga pri izobraževalnih delavnicah s svojimi publikacijami in izkušnjami) ter Jack Harris (kot eden najboljših arheologov paleo-krajin) je prav tako pomembno za znanstven napredek Slovenije. Pruetz in njeni študentje (vključno z mano) smo npr. obogatili znanje o šimpanzih na nepričakovane načine: šimpanzi se izredno bojijo vode, fongolska skupnost pa kot kaže uživa v namaknjju v mlakah ob začetku deževja; ob polni luni se gibajo in hranijo tudi ponoči (česar ne bi vedeli ako raziskovalci ne bi večkrat prenočili s šimpanzi); kažejo edinstveno obliko lova na polopice s pomočjo orožja ter se zatekajo v jame podobno kot naši predniki. Vsa ta in nova spoznanja iz tega projekta sem predstavila tudi slovenskim študentom sociologije, biologije, arheologije in pedagogike. A odkritij ne bi bilo brez predanega dela lokalnih asistentov, vodičev, šoferjev, »prevajalcev«, in le-to je temelj terenske primatologije. Znanstveno polje primatologije na podlagi mojih »pinonirskih« terenski izkušenj iz Kameruna in Senegala sem samo vpeljala v program Evolucije človeka na oddelku za biologijo Biotehniške fakultete. Žal pa se je situacija spremenila odkar več nisem zaposlena na BF in me kot predavatelja sploh niso povabili k sodelovanju. Za razliko od Fakultete za družbene vede, kjer sem v okviru predmeta Kulturne študije (K. Šabec) decembra 2012 predavala o projektu »Savanski šimpanzi in evolucija človeka«. Primatološko izkušnjo sem samostojno predstavila tudi v raznih krajih Slovenije (Kavarna Idrija 2010, Menza pri koritu Ljubljana in Muzikafe Ptuj 2013), v časopisu Delo pa so februarja z mano objavili pogovor o terenskem delu (<http://www.delo.si/druzba/panorama/zanimajo-me-afne-v-naravnem-okolju.html>).

V bodoče vseeno upam, da bodo z izkušenimi znanstveniki in savanskimi varuhi divjine lahko sodelovali tudi slovenski študentje in nadaljevali plodne mednarodne raziskave.

Aktualna odkritja o savanskih šimpanzih sem predstavila na dveh kongresih mednarodne primatološke zveze (IPS), septembra 2010 v Kyotu na Japonskem o implikacijah za razumevanje evolucije človeka in avgusta 2012 v Cancunu Mehika o rezultatih projekta Z6-3676 (glej izjemni dosežek!). Kot podoktorska sodelavka na Biotehniški fakulteti sem bila edina slovenska predstavica na obeh srečanjih. Materialna kultura vrste *Pan troglodytes* verus je bila osrednja tema vabljenega predavanja na mednarodni konferenci Biološka znanost in družba (Ljubljana, oktober 2010), ki je dostopno tudi na spletu (www.videlectures.net/MajaGaspersic). Na srečanju "Škerljevi dnevi" 2010 sem predstavila prve rezultate in pomen tega projekta in Slovenskemu antropološkemu društvu hkrati nakazala

delovanje terenske etnoprimateologije. Jeseni 2011 pa sem na IV. evropskem primatološkem kongresu (EFP) v Lizboni prikazala dejanske sporne situacije med šimpanzi in prebivalci okrožja Bandafassi ter možnosti bodočega sobivanja teh »bratrancev« v savanski krajini. Za "razvoj" te države je pravitako pomemben prvi prevod primatološkega dela v slovenščino: Omikani šimpanz: razmišljanja o kulturni primatologiji, ki jo je spisal eden najpomembnejših strokovnjakov Bill McGrew. Knjiga obravnava relativno novo področje šimpanzij kultur in jih navezuje na druge antropološke discipline. McGrew predstavi obilico presenetljivih primerov živalskih kultur in se sprašuje o prihodnosti kulturne primatologije kot dragocenega polja raziskav, ki bi naj pripomogle k boljšemu umevanju evolucije človeške kulture. The cultured chimpanzee je bil prvič objavljen 2004, v zadnjem desetletju pa je prišlo do precej spektakularnih odkritij (posebej iz skupnosti šimpanzov Fongoli), ki sem jih predstavila v spremni besedi slovenske izdaje (SH, 2011).

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Still ongoing collaboration with important scientists such as Jill Pruetz (an emerging explorer at National Geographic Society), Janis Carter (who established the first chimpanzee sanctuary in West Africa at Baboon Islands of the Gambia and works with us on chimpanzee-human relations and educational workshops) and Jack Harris (as one of the best landscape archaeologists and the director of Koobi Fora field school) is also of significant importance for the scientific development of Slovenia. For example, Pruetz and her students (including me) enriched the knowledge about chimpanzees in unexpected ways: chimpanzees in general are hydrophobic, but Fongoli chimps enjoy soaking in natural pools when the rains begin; during the moon-lit nights they forage and travel (which would be unknown if researchers would not often spend the night with them); they exhibit a unique form of tool-assisted hunting for prosimians and use caves as our ancestors. All of these and new findings from this project were presented to Slovenian students of sociology, biology, archaeology and pedagogy. However, none of these discoveries would be possible without the dedicated work of local assistants, guides, drivers, and "translators", which is essential for field primatology. The scientific field of primatology, based on my »pioneer« experience from Cameroon and Senegal was already introduced to the course of Human evolution at the Biology department of Biotechnical faculty. Unfortunately the situation changed after my contract was finished and I was not included as a lecturer at BF. Instead I was invited to present my work at the Faculty for social sciences (FDV) and in december 2012 discussed the project »Savanna chimpanzees and human evolution« at the course Cultural studies (K. Šabec). I still hope that in the future Slovenian students will also have the opportunity to collaborate with various scientists and these savanna guardians on a promising international research.

Additionally, current discoveries about savanna chimpanzees were presented at two biannual congresses of the International Primatological Society: in Kyoto, Japan (September 2010) with focus on implications for human evolution and Cancun, Mexico (August 2012) with results from this project. As a post-doc researcher at Biotechnical Faculty of Ljubljana I was the only Slovenian presenter at both meetings, and supposedly these results radically changed our perceptions of hominin habitat use in the Oldowan (Harris, personal communication). The material culture of Pan troglodytes verus was presented in an invited lecture at the international conference Biosciences and society (Ljubljana, October 2010) and is accessible on line (www.videolectures.net/MajaGaspersic). The initial results from this project were presented at the meeting "Škerljevi dnevi" and at the same time I introduced the interdisciplinary research of ethnoprimateology to Slovenian anthropological society. At the IV. European primatological congress (EFP) in Lisbon (fall 2011) I discussed the actual conflict situations between chimpanzees and humans at Bandafassi arrondissement and the prospects for future coexistence of these »cousins« in a savanna landscape.

Perhaps even more relevant for the development of our country is the first translation of a primatological book into Slovenian language: The cultured chimpanzee; reflections on cultural primatology by William McGrew. The book tackles the new and exciting field of chimpanzee cultures and relates it to other disciplines of anthropology. McGrew presents many unexpected discoveries of non-human culture and the prospects for cultural primatology as a valuable field of inquiry as regards a better understanding of the evolution of human culture. The cultured chimpanzee was first published in 2004, while during the last decade new stunning findings emerged (particularly from Fongoli) and they are presented in my introduction to the Slovenian edition (Studia humanitatis 2011).

11.Samo za aplikativne projekte in podoktorske projekte iz gospodarstva!

Označite, katerega od navedenih ciljev ste si zastavili pri projektu, katere konkretne rezultate ste dosegli in v kakšni meri so doseženi rezultati uporabljeni

Cilj		
F.01	Pridobitev novih praktičnih znanj, informacij in veščin	
	Zastavljen cilj	<input type="radio"/> DA <input type="radio"/> NE
	Rezultat	<input type="text"/>
	Uporaba rezultatov	<input type="text"/>
F.02	Pridobitev novih znanstvenih spoznanj	
	Zastavljen cilj	<input type="radio"/> DA <input type="radio"/> NE
	Rezultat	<input type="text"/>
	Uporaba rezultatov	<input type="text"/>
F.03	Večja usposobljenost raziskovalno-razvojnega osebja	
	Zastavljen cilj	<input type="radio"/> DA <input type="radio"/> NE
	Rezultat	<input type="text"/>
	Uporaba rezultatov	<input type="text"/>
F.04	Dvig tehnološke ravni	
	Zastavljen cilj	<input type="radio"/> DA <input type="radio"/> NE
	Rezultat	<input type="text"/>
	Uporaba rezultatov	<input type="text"/>
F.05	Sposobnost za začetek novega tehnološkega razvoja	
	Zastavljen cilj	<input type="radio"/> DA <input type="radio"/> NE
	Rezultat	<input type="text"/>
	Uporaba rezultatov	<input type="text"/>
F.06	Razvoj novega izdelka	
	Zastavljen cilj	<input type="radio"/> DA <input type="radio"/> NE
	Rezultat	<input type="text"/>
	Uporaba rezultatov	<input type="text"/>
F.07	Izboljšanje obstoječega izdelka	
	Zastavljen cilj	<input type="radio"/> DA <input type="radio"/> NE
	Rezultat	<input type="text"/>
	Uporaba rezultatov	<input type="text"/>
F.08	Razvoj in izdelava prototipa	
	Zastavljen cilj	<input type="radio"/> DA <input type="radio"/> NE
	Rezultat	<input type="text"/>
	Uporaba rezultatov	<input type="text"/>
F.09	Razvoj novega tehnološkega procesa oz. tehnologije	

	Zastavljen cilj	<input type="radio"/> DA <input type="radio"/> NE
	Rezultat	<input type="text"/>
	Uporaba rezultatov	<input type="text"/>
F.10	Izboljšanje obstoječega tehnološkega procesa oz. tehnologije	
	Zastavljen cilj	<input type="radio"/> DA <input type="radio"/> NE
	Rezultat	<input type="text"/>
	Uporaba rezultatov	<input type="text"/>
F.11	Razvoj nove storitve	
	Zastavljen cilj	<input type="radio"/> DA <input type="radio"/> NE
	Rezultat	<input type="text"/>
	Uporaba rezultatov	<input type="text"/>
F.12	Izboljšanje obstoječe storitve	
	Zastavljen cilj	<input type="radio"/> DA <input type="radio"/> NE
	Rezultat	<input type="text"/>
	Uporaba rezultatov	<input type="text"/>
F.13	Razvoj novih proizvodnih metod in instrumentov oz. proizvodnih procesov	
	Zastavljen cilj	<input type="radio"/> DA <input type="radio"/> NE
	Rezultat	<input type="text"/>
	Uporaba rezultatov	<input type="text"/>
F.14	Izboljšanje obstoječih proizvodnih metod in instrumentov oz. proizvodnih procesov	
	Zastavljen cilj	<input type="radio"/> DA <input type="radio"/> NE
	Rezultat	<input type="text"/>
	Uporaba rezultatov	<input type="text"/>
F.15	Razvoj novega informacijskega sistema/podatkovnih baz	
	Zastavljen cilj	<input type="radio"/> DA <input type="radio"/> NE
	Rezultat	<input type="text"/>
	Uporaba rezultatov	<input type="text"/>
F.16	Izboljšanje obstoječega informacijskega sistema/podatkovnih baz	
	Zastavljen cilj	<input type="radio"/> DA <input type="radio"/> NE
	Rezultat	<input type="text"/>
	Uporaba rezultatov	<input type="text"/>
F.17	Prenos obstoječih tehnologij, znanj, metod in postopkov v prakso	
	Zastavljen cilj	<input type="radio"/> DA <input type="radio"/> NE
	Rezultat	<input type="text"/>

	Uporaba rezultatov	<input type="text"/>
F.18	Posredovanje novih znanj neposrednim uporabnikom (seminarji, forumi, konference)	
	Zastavljen cilj	<input type="radio"/> DA <input type="radio"/> NE
	Rezultat	<input type="text"/>
	Uporaba rezultatov	<input type="text"/>
F.19	Znanje, ki vodi k ustanovitvi novega podjetja ("spin off")	
	Zastavljen cilj	<input type="radio"/> DA <input type="radio"/> NE
	Rezultat	<input type="text"/>
	Uporaba rezultatov	<input type="text"/>
F.20	Ustanovitev novega podjetja ("spin off")	
	Zastavljen cilj	<input type="radio"/> DA <input type="radio"/> NE
	Rezultat	<input type="text"/>
	Uporaba rezultatov	<input type="text"/>
F.21	Razvoj novih zdravstvenih/diagnostičnih metod/postopkov	
	Zastavljen cilj	<input type="radio"/> DA <input type="radio"/> NE
	Rezultat	<input type="text"/>
	Uporaba rezultatov	<input type="text"/>
F.22	Izboljšanje obstoječih zdravstvenih/diagnostičnih metod/postopkov	
	Zastavljen cilj	<input type="radio"/> DA <input type="radio"/> NE
	Rezultat	<input type="text"/>
	Uporaba rezultatov	<input type="text"/>
F.23	Razvoj novih sistemskih, normativnih, programskih in metodoloških rešitev	
	Zastavljen cilj	<input type="radio"/> DA <input type="radio"/> NE
	Rezultat	<input type="text"/>
	Uporaba rezultatov	<input type="text"/>
F.24	Izboljšanje obstoječih sistemskih, normativnih, programskih in metodoloških rešitev	
	Zastavljen cilj	<input type="radio"/> DA <input type="radio"/> NE
	Rezultat	<input type="text"/>
	Uporaba rezultatov	<input type="text"/>
F.25	Razvoj novih organizacijskih in upravljavskih rešitev	
	Zastavljen cilj	<input type="radio"/> DA <input type="radio"/> NE
	Rezultat	<input type="text"/>
	Uporaba rezultatov	<input type="text"/>
F.26	Izboljšanje obstoječih organizacijskih in upravljavskih rešitev	

	Zastavljen cilj	<input type="radio"/> DA <input type="radio"/> NE
	Rezultat	<input type="text"/>
	Uporaba rezultatov	<input type="text"/>
F.27	Prispevek k ohranjanju/varovanje naravne in kulturne dediščine	
	Zastavljen cilj	<input type="radio"/> DA <input type="radio"/> NE
	Rezultat	<input type="text"/>
	Uporaba rezultatov	<input type="text"/>
F.28	Priprava/organizacija razstave	
	Zastavljen cilj	<input type="radio"/> DA <input type="radio"/> NE
	Rezultat	<input type="text"/>
	Uporaba rezultatov	<input type="text"/>
F.29	Prispevek k razvoju nacionalne kulturne identitete	
	Zastavljen cilj	<input type="radio"/> DA <input type="radio"/> NE
	Rezultat	<input type="text"/>
	Uporaba rezultatov	<input type="text"/>
F.30	Strokovna ocena stanja	
	Zastavljen cilj	<input type="radio"/> DA <input type="radio"/> NE
	Rezultat	<input type="text"/>
	Uporaba rezultatov	<input type="text"/>
F.31	Razvoj standardov	
	Zastavljen cilj	<input type="radio"/> DA <input type="radio"/> NE
	Rezultat	<input type="text"/>
	Uporaba rezultatov	<input type="text"/>
F.32	Mednarodni patent	
	Zastavljen cilj	<input type="radio"/> DA <input type="radio"/> NE
	Rezultat	<input type="text"/>
	Uporaba rezultatov	<input type="text"/>
F.33	Patent v Sloveniji	
	Zastavljen cilj	<input type="radio"/> DA <input type="radio"/> NE
	Rezultat	<input type="text"/>
	Uporaba rezultatov	<input type="text"/>
F.34	Svetovalna dejavnost	
	Zastavljen cilj	<input type="radio"/> DA <input type="radio"/> NE
	Rezultat	<input type="text"/>
	Uporaba rezultatov	<input type="text"/>

F.35	Drugo	
	Zastavljen cilj	<input type="radio"/> DA <input type="radio"/> NE
	Rezultat	<input type="text"/>
	Uporaba rezultatov	<input type="text"/>

Komentar

12.Samo za aplikativne projekte in podoktorske projekte iz gospodarstva!
Označite potencialne vplive oziroma učinke vaših rezultatov na navedena področja

	Vpliv	Ni vpliva	Majhen vpliv	Srednji vpliv	Velik vpliv	
G.01	Razvoj visokošolskega izobraževanja					
G.01.01.	Razvoj dodiplomskega izobraževanja	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
G.01.02.	Razvoj podiplomskega izobraževanja	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
G.01.03.	Drugo: <input type="text"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
G.02	Gospodarski razvoj					
G.02.01	Razširitev ponudbe novih izdelkov/storitev na trgu	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
G.02.02.	Širitev obstoječih trgov	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
G.02.03.	Znižanje stroškov proizvodnje	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
G.02.04.	Zmanjšanje porabe materialov in energije	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
G.02.05.	Razširitev področja dejavnosti	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
G.02.06.	Večja konkurenčna sposobnost	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
G.02.07.	Večji delež izvoza	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
G.02.08.	Povečanje dobička	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
G.02.09.	Nova delovna mesta	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
G.02.10.	Dvig izobrazbene strukture zaposlenih	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
G.02.11.	Nov investicijski zagon	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
G.02.12.	Drugo: <input type="text"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
G.03	Tehnološki razvoj					
G.03.01.	Tehnološka razširitev/posodobitev dejavnosti	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
G.03.02.	Tehnološko prestrukturiranje dejavnosti	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
G.03.03.	Uvajanje novih tehnologij	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
G.03.04.	Drugo: <input type="text"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
G.04	Družbeni razvoj					
G.04.01	Dvig kvalitete življenja	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
G.04.02.	Izboljšanje vodenja in upravljanja	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
G.04.03.	Izboljšanje delovanja administracije	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	

	in javne uprave					
G.04.04.	Razvoj socialnih dejavnosti	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
G.04.05.	Razvoj civilne družbe	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
G.04.06.	Drugo:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
G.05.	Ohranjanje in razvoj nacionalne naravne in kulturne dediščine in identitete	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
G.06.	Varovanje okolja in trajnostni razvoj	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
G.07	Razvoj družbene infrastrukture					
G.07.01.	Informacijsko-komunikacijska infrastruktura	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
G.07.02.	Prometna infrastruktura	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
G.07.03.	Energetska infrastruktura	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
G.07.04.	Drugo:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
G.08.	Varovanje zdravja in razvoj zdravstvenega varstva	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
G.09.	Drugo:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	

Komentar

--

13.Pomen raziskovanja za sofinancerje¹²

	Sofinancer	
1.	Naziv	
	Naslov	
	Vrednost sofinanciranja za celotno obdobje trajanja projekta je znašala:	EUR
	Odstotek od utemeljenih stroškov projekta:	%
	Najpomembnejši rezultati raziskovanja za sofinancerja	Šifra
	1.	
	2.	
	3.	
	4.	
	5.	
Komentar		
Ocena		

14.Izjemni dosežek v letu 2012¹³**14.1. Izjemni znanstveni dosežek**

Prispevek na XXIV. Mednarodnem primatološkem kongresu IPS v Mehiki (Cancun, avgust 2012) povzema rezultate projekta Z6-3676: "Chimpanzees and humans in Bandafassi arrondissement, south-eastern Senegal: sharing a savanna landscape«. Predavanje je temeljilo na dveletnem
--

terenskem delu v Senegalu s poudarkom na spodbudi za zaščito savanskih šimpanzov v sodelovanju z lokalnim prebivalstvom (glej priponko). Na zadnjih dveh srečanjih (Kyoto 2010 in Cancun lani) sem bila edina predstavnica Slovenije.

14.2. Izjemni družbeno-ekonomski dosežek

Decembra 2011 sem na oddelku za vodovja in gozdove Ministrstva za okolje in zaščito narave (Direction des eaux, forêts et chasses) v Senegalu dobila lastno dovoljenje za raziskavo. Pooblastilo mi omogoča samostojno spremljanje skupnosti savanskih šimpanzov, njihovega vedenja in prehrane v okrožju Bandafassi, regija Kédougou. Istočasno proučujemo gozdne koridorje za selitve skupnosti in grožnje ohranitvi vrste in njenega naravnega okolja. Postopke raziskav so odobrili na oddelku Eaux et forêts in rezultate terenskega dela sem jim dolžna redno sporočati. Za bolj učinkovito delo zaščite šimpanzov nas mora na terenu občasno spremljati lokalni predstavnik oddelka (glej priponko). Sem edina Slovenka s takim pooblastilom v Zahodni Afriki zato ga uvrščam med izjemen dosežek s tega projekta.

C. IZJAVE

Podpisani izjavljam/o, da:

- so vsi podatki, ki jih navajamo v poročilu, resnični in točni
- se strinjamo z obdelavo podatkov v skladu z zakonodajo o varstvu osebnih podatkov za potrebe ocenjevanja ter obdelavo teh podatkov za evidence ARRS
- so vsi podatki v obrazcu v elektronski obliki identični podatkom v obrazcu v pisni obliki
- so z vsebino zaključnega poročila seznanjeni in se strinjajo vsi soizvajalci projekta

Podpisi:

*zastopnik oz. pooblaščen oseba
raziskovalne organizacije:*

in

vodja raziskovalnega projekta:

Univerza v Ljubljani, Biotehniška
fakulteta

Maja Gašperšič

ŽIG

Kraj in datum:

Oznaka prijave: ARRS-RPROJ-ZP-2013/279

¹ Opredelite raziskovalno področje po klasifikaciji FOS 2007 (Fields of Science). Prevajalna tabela med raziskovalnimi področji po klasifikaciji ARRS ter po klasifikaciji FOS 2007 (Fields of Science) s kategorijami WOS (Web of Science) kot podpodročji je dostopna na spletni strani agencije (<http://www.arrs.gov.si/sl/gradivo/sifranti/preslik-vpp-fos-wos.asp>). [Nazaj](#)

² Napišite povzetek raziskovalnega projekta (največ 3.000 znakov v slovenskem in angleškem jeziku) [Nazaj](#)

³ Napišite kratko vsebinsko poročilo, kjer boste predstavili raziskovalno hipotezo in opis raziskovanja. Navedite ključne ugotovitve, znanstvena spoznanja, rezultate in učinke raziskovalnega projekta in njihovo uporabo ter sodelovanje s tujimi partnerji. Največ 12.000 znakov vključno s presledki (približno dve strani, velikost pisave 11). [Nazaj](#)

⁴ Realizacija raziskovalne hipoteze. Največ 3.000 znakov vključno s presledki (približno pol strani, velikost pisave 11) [Nazaj](#)

⁵ V primeru bistvenih odstopanj in sprememb od predvidenega programa raziskovalnega projekta, kot je bil zapisan v predlogu raziskovalnega projekta oziroma v primeru sprememb, povečanja ali zmanjšanja sestave projektne skupine v zadnjem letu izvajanja projekta, napišite obrazložitev. V primeru, da sprememb ni bilo, to navedite. Največ 6.000 znakov vključno s presledki (približno ena stran, velikost pisave 11). [Nazaj](#)

⁶ Navedite znanstvene dosežke, ki so nastali v okviru tega projekta. Raziskovalni dosežek iz obdobja izvajanja projekta (do oddaje zaključnega poročila) vpišete tako, da izpolnite COBISS kodo dosežka – sistem nato sam izpolni naslov

objave, naziv, IF in srednjo vrednost revije, naziv FOS področja ter podatek, ali je dosežek uvrščen v A'' ali A'. [Nazaj](#)

⁷ Navedite družbeno-ekonomske dosežke, ki so nastali v okviru tega projekta. Družbeno-ekonomski rezultat iz obdobja izvajanja projekta (do oddaje zaključnega poročila) vpišete tako, da izpolnite COBISS kodo dosežka – sistem nato sam izpolni naslov objave, naziv, IF in srednjo vrednost revije, naziv FOS področja ter podatek, ali je dosežek uvrščen v A'' ali A'.

Družbeno-ekonomski dosežek je po svoji strukturi drugačen kot znanstveni dosežek. Povzetek znanstvenega dosežka je praviloma povzetek bibliografske enote (članka, knjige), v kateri je dosežek objavljen.

Povzetek družbeno-ekonomskega dosežka praviloma ni povzetek bibliografske enote, ki ta dosežek dokumentira, ker je dosežek sklop več rezultatov raziskovanja, ki je lahko dokumentiran v različnih bibliografskih enotah. COBISS ID zato ni enoznačen, izjemoma pa ga lahko tudi ni (npr. prehod mlajših sodelavcev v gospodarstvo na pomembnih raziskovalnih nalogah, ali ustanovitev podjetja kot rezultat projekta ... - v obeh primerih ni COBISS ID). [Nazaj](#)

⁸ Navedite rezultate raziskovalnega projekta iz obdobja izvajanja projekta (do oddaje zaključnega poročila) v primeru, da katerega od rezultatov ni mogoče navesti v točkah 7 in 8 (npr. ker se ga v sistemu COBISS ne vodi). Največ 2.000 znakov, vključno s presledki. [Nazaj](#)

⁹ Pomen raziskovalnih rezultatov za razvoj znanosti in za razvoj Slovenije bo objavljen na spletni strani: <http://sicris.izum.si/> za posamezen projekt, ki je predmet poročanja [Nazaj](#)

¹⁰ Največ 4.000 znakov, vključno s presledki [Nazaj](#)

¹¹ Največ 4.000 znakov, vključno s presledki [Nazaj](#)

¹² Rubrike izpolnite / prepisite skladno z obrazcem "izjava sofinancerja" <http://www.arrs.gov.si/sl/progproj/rproj/gradivo/>, ki ga mora izpolniti sofinancer. Podpisan obrazec "Izjava sofinancerja" pridobi in hrani nosilna raziskovalna organizacija – izvajalka projekta. [Nazaj](#)

¹³ Navedite en izjemni znanstveni dosežek in/ali en izjemni družbeno-ekonomski dosežek raziskovalnega projekta v letu 2012 (največ 1000 znakov, vključno s presledki). Za dosežek pripravite diapozitiv, ki vsebuje sliko ali drugo slikovno gradivo v zvezi z izjemnim dosežkom (velikost pisave najmanj 16, približno pol strani) in opis izjemnega dosežka (velikost pisave 12, približno pol strani). Diapozitiv/-a priložite kot priložitev/-i k temu poročilu. Vzorec diapozitiva je objavljen na spletni strani ARRS <http://www.arrs.gov.si/sl/gradivo/>, predstavitev dosežkov za pretekla leta pa so objavljena na spletni strani <http://www.arrs.gov.si/sl/analize/dosez/>. [Nazaj](#)

Obrazec: ARRS-RPROJ-ZP/2013 v1.00
95-14-3F-5F-EE-D3-20-F3-06-3D-B5-97-7A-3D-6F-59-47-96-3F-CD

N° 02984

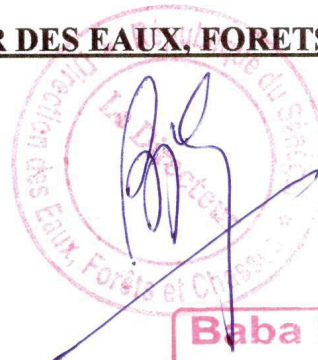
DEF/DGF

Dakar, le 22 DEC 2011

AUTORISATION DE RECHERCHE

- BENEFICIAIRE: Dr. Maja Gaspersic
- OBJET DE LA RECHERCHE : L'étude porte sur les Chimpanzés sans abattage des sujets
- + Le suivi des populations de Chimpanzé ;
 - + Leur comportement ;
 - + Leur alimentation ;
 - + Les corridors de migration ;
 - + Et les menaces qui pèsent sur l'espèce et son habitat ;
- RESPONSABLES DE L'ETUDE : Dr Maja Gaspersic assistant/chercheur à l'Université de Ljubljana en SLOVENIE
- LIEU DE RECHERCHE : **Dans l'Arrondissement de Bandafassi, département de Kédougou**
(En dehors des limites immédiates des Parcs Nationaux)
- ESPECES COUVERTE : Chimpanzé
- VALIDITE: **Un (01) an à partir de la date de signature**
- MENTIONS PARTICULIERES:**
- + Les procédés de recherches autorisés sont ceux prévus par le Code de la Chasse et de la Protection de la Faune ;
 - + Les résultats issus de ces recherches seront communiqués à la Direction des Eaux, Forêts et Chasses ;
 - + L'équipe de recherche sera accompagnée sur le terrain par un Agent des Eaux, Forêts et Chasses dont la prise en charge sera assurée par le/la bénéficiaire de la présente autorisation de recherche.

LE DIRECTEUR DES EAUX, FORETS ET CHASSES



Baba SARR
Ingénieur des Eaux et Forêts

Naravoslovne vede (biologija)

Področje: 6.03 .01.– Fizična antropologija

Prispevek na mednarodnem kongresu . Vir: COBISS.si 2666831

XXIV. IPS congress, Mexico 2012: "Primateology's legacy and future challenges"

CHIMPANZEES AND HUMANS AT BANDAFASSI, SENEGAL: SHARING A SAVANNA LANDSCAPE



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University of Ljubljana, Biotechnical Faculty,
Department of Biology, Slovenia



Rezultate dvoletne terenske raziskave v Senegalu (bistvo projekta Savanski šimpanzi in evolucija človeka) sem avgusta 2012 predstavila na simpoziju o zaščiti primatov na 26. mednarodnem primatološkem kongresu IPS v Cancunu, Mehika. Osredotočila sem se na etnoprimateološki pristop k zaščiti šimpanzov (sodelovanje znanstvenikov in okoljevarstvenikov z lokalnim prebivalstvom) in poudarila implikacije odkritij o šimpanzji prehrani, gibanju in rabi orodja za evolucijo človeka. Predavanje je pritegnilo zanimanje predstavnikov mednarodnih nevladnih organizacij: I. Redmond - GRASP (Great Ape Survival Partnership) in J. Dupain - AWF (African Wildlife Foundation) in mi omogočilo sodelovanje s strokovnjaki za varstvo narave. Fundacija Wenner Gren je podprla prvo srečanje primatologov v regiji Kédougou, ki ga organizira Dr. Pruetz (junij 2013). V akademskem smislu pa sem navezala stike z Dr. Casanova iz univerze v Lizboni in skupno pripravljamo raziskavo o zahodnih šimpanzih in homininih Oldowana.

FINAL REPORT

Project Z6-3676 »Savanna chimpanzees and human evolution«

“Community-based conservation of chimpanzees in south-eastern Senegal: the human element in Bandafassi arrondissement; ape-tourism in question”

Maja Gašperšič, PhD

Introduction

Chimpanzees are our closest living relatives and at the same time one of the most endangered species on the planet. West african chimpanzee (*Pan troglodytes verus*) is considered as expatriated in two countries and is facing a dramatic decline (see the latest IUCN report). Senegalese chimpanzees are seemingly close to extinction (Humble *et al.* 2008, Plumtre *et al.* 2010). The last census, undertaken in 2002/03, estimated the population, limited to Kédougou region, to number between 200 and 400 apes (Carter *et al.* 2003). Current conservation action plans have classified Senegal as “an exceptionally important priority area” for chimpanzee protection, which demands immediate attention” (Kormos & Boesch 2003). Additionally, apes of the Mandingue plateau live at the northern edge of species’ distribution, in a savanna landscape that characterized an important transitional period in human evolution. Therefore research on open-habitat chimpanzees can bear valuable implications for understanding the context and origins of early hominin behavior, particularly habitat-use, foraging adaptations and material culture (Harris *et al.* 2010).

Similarly to other apes, savanna chimps are faced with drastic habitat loss due to population growth, accompanied with instances of poaching and pet-trade and the danger of disease transmission. In particular, Senegalese apes live in intense sympatry with humans and compete over common resources such as food, water and habitat. Based on estimates from nest surveys, chimpanzees occur at a density of 0.09 individuals per km² (Pruetz *et al.* 2002). According to Cowlshaw & Dunbar (2000), primates with abundance below 7 individuals per km² are defined as rare; thus our chimpanzee case is an extreme in this aspect as well.

Furthermore, given the anticipated changes due to gold and iron mining in Kédougou region, along with seasonal influx of migratory sheep herds to this area, conserving chimpanzees has reached a critical juncture. However, primates and humans in rural Senegal have a mythical relation and thus local folklore allows them sharing of space. Positively, hunting chimpanzees for food is virtually non-existent, on the grounds of their unique position among other primates. For example, Bedik initiation rites include a tale of boys (scarred of the process) transforming into chimpanzees, while Peuhl and Bassari people believe that chimpanzees are ancient humans, when they did not yet know language, clothes, or fire.

This project begun in April 2010 as part of the investigation »Conservation of chimpanzees in south-eastern Senegal: the human element«. The venture was initiated and supervised by Dr. Jill Pruetz (*Fongoli Savanna Chimpanzees Project*) and was partly supported by the USAID organization Wula Nafaa. Collaborative efforts include awareness workshops and eco-stewards indentification in villages sympatric with chimpanzees (led by Dondo Kanté), research on impacts of mining on apes (conducted by Kelly Boyer) and prospects for community-based conservation in Bandafassi arrondissement (this study). Initially we identified the remaining ape communities in the area, their key water and food sources, their ranging patterns (nesting, foraging, and sightings), and particularly chimpanzees' relation to humans via ethnoprimateological approach. Our long-term goal is the creation of nature-culture program that would enable alternatives for local people and provide incentive for chimpanzee protection. Nesting survey in this large area should aid in estimating the current population of Senegalese chimpanzees. Additional aim was to assess demographic profiles of study groups and their possibilities for gene flow via female transfer.

Methods

The landscape in south-eastern Senegal is marginal for chimpanzees, being extremely dry, hot and open (see Pruetz & Bertolani 2009). Rainfall averages <800 mm annually, while the rainy season is concentrated from mid-June until mid-October. Mean annual temperature is 28.2 °C, average temperature at the end of dry season is 36 °C, reaching its maximum in May (49 °C). Kédougou region can be characterized as a transition zone between Sudanese and Sudo-Guinean vegetative belts, with the former predominating (Pruetz 2006). The habitat is a mosaic of gallery forest and ecotone, bamboo thicket/woodland, plateau (short grassland), closed and open woodland and wooded grassland, with the last two types dominating. The topography is composed of plateaus, valleys and hills, the highest peak in the region being

Mt. Bagnomba (426 m), considered sacred by the local Malinke people and inhabited by a small chimp community. The pronounced dry period and the subsequent heavy rainfalls produce climatic seasonality, which has a dramatic impact on the vegetation. Disturbed areas with agricultural activity and pastoralism contribute to the peculiar nature of this region.

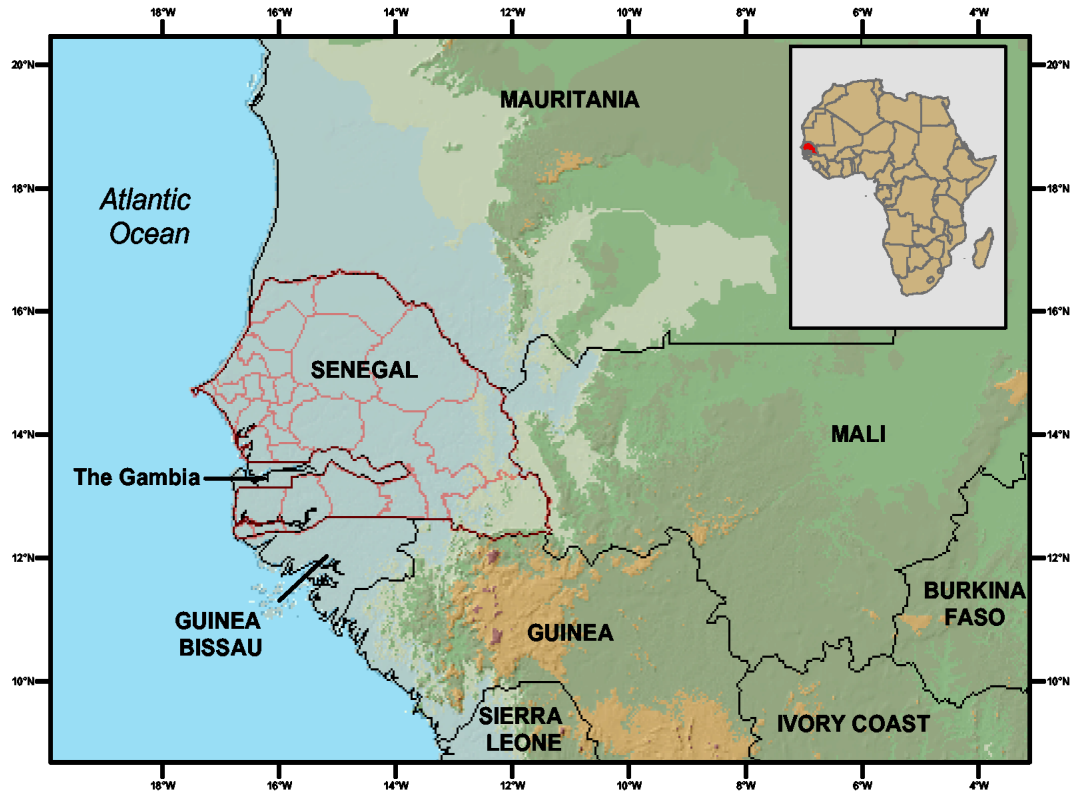
Habitat composition at study sites was sampled by walking several km in random directions and assessing the general habitat within 50 m radius each 30 m. The classification of vegetation types was adapted after Bogart & Pruetz (2010). A phenology transect (1 km long, 10 m wide) was established at each study site to monitor forest production throughout the year. Additional trees, important for chimpanzees, were marked as well (e.g. baobab, *Cola cordifolia*, *Parkia biglobosa*...) along with termite mounds and beehives. We also noted encounters with large (>5 kg) mammals and humans during fieldwork to estimate the presence of predators, competitors and potential prey-species for chimpanzees. Identifying ranging behavior included continuous recording of signs for chimpanzee activity and if indices were positive (fresh debris or vocalizations heard), we tried to approach the apes. Standard method - *ad libitum sampling* (Altmann 1974) was applied during contacts: time, location and habitat type, the number and age/sex of individuals, their activity at sighting, duration of encounter, distance from observers, reactions to humans, locomotion patterns, changes in habitat, presence of food or water, and distance to human habitation.

Diet composition was assessed through observations, feeding traces, and fecal-sample analyses, based on methods by McGrew *et al.* (2009). When possible, we recorded all occurrences of feeding during follows, to provide information on sequential feeding (i.e. “feed as you go”). Nest characteristics were adopted after Pruetz *et al.* (2002), while data collection for elementary technology follows the criteria of McGrew *et al.* (2003). For each nesting site we recorded the location (GPS) and habitat type, and for each nest its visibility (open to the sky?), relative age (fresh, recent, old, rotten), and nest height, nesting tree height and tree species, distance to the nearest neighbour nest, and the presence of escape route. We also noticed if the nest was reused or if the nest site was located at previously used trees or micro-habitats by chimpanzees. These data will enable the assessment of favourite sleeping points for savanna chimpanzees. Special attention was paid to behaviours described as *cultural variants* by Whiten *et al.* (1999), which in case of un-habituated subjects involves mainly indirect data on tool-use (e.g. in termite-fishing, ant-dipping, and baobab smashing; for evolutionary modelling see Gašperšič 2008). All occurrences of cave use (Pruetz 2007), medicinal plant use (Huffman 2001), and geophagy (soil –eating) were recorded as well.

Characteristics of study sites

The Kédougou region is generally human dominated landscape, where resources are scarce, seasonal, maximally exploited and chimpanzees are pushed to their socio-ecological edge. Due to the importance of food-rich areas, water sources and gallery forests we eventually settled for three priority field-sites: the mountain slopes of Etchoar above the **Bandafassi** village (BF), where apes captured goats; the surroundings of **Nathia** (NA: 12°29.20'N, 12°22.08'W), that was not identified in previous chimpanzee surveys (Carter *et al.* 2003) and shows no overt conflict between species; and the stream of **Angafou** (AN: 12°34.45'N, 12°24.45'W), its rich gallery forest and mango orchards, being crop-raided by apes, supposedly after when commercial harvesting of baobab and *Saba* fruits increased. Two buffer-zones are surveyed additionally to provide basic information about the presence of chimpanzees in the remaining forest patches between the Niokolo Koba national park and neighboring Guinea Conakry. Since savanna chimpanzees have large home ranges we monitor the zone following Angafou stream from Thiarmalel, via Assoniel and Babel towards abandoned village **Sangola** and Atako at the periphery of the park. This once wooded area is now heavily disturbed by shepherds each dry season. Chimpanzees were seen crossing the park boundary and possibly they do encounter other ape communities inside PNNK or from neighboring Mt. Bagnomba. The area south along Gambia River and towards Guinea border has several sites where chimpanzees occur sympatrically with humans and indicate various conflicts over resources: Neudou with palm-wine harvesting, Habibou with illegal, unsustainable, but commercial raphia-cutting practice. **Marewa** (12°27.95'N, 12°12.84'W), where a small chimpanzee party was seen already in 2006, is rich with rhonier palms and becomes a popular site for wine collectors at the end of the dry season. Chimpanzees are seen there only when humans are not common and it appears that their seasonal activity affects the ranging patterns of apes. However, this large mountainous forested region spreads over the border of Guinea and is proposed to be monitored collaboratively between the two countries (Ndiaye, personal communication).

Map bellow showing the geographical context of the project “Savanna chimpanzees and human evolution – and current interface” (Kédougou region spreads in the far south-eastern corner of Senegal, Bandafassi arrondissement 15 km south-west of the town)



Results

From April 2010 through December 2011 we conducted more than 400 days of field surveys (often two or three sites were surveyed simultaneously). With the aid of Global Positioning System (GPS) we located 13 villages associated with chimpanzees and several dry season water sources and caves/rock shelters. In total we analyzed 257 feeding records, 230 nesting sites and investigated numerous termite mounds and baobab trees for evidence of tool-use. Chimpanzees were encountered more than 350 times at above mentioned locations.

Chimpanzee and human usage of the given flora was monitored monthly at three transects with a total of 507 woody plants. As we covered the transitional period between dry and rainy season we documented an extreme transformation of vegetation and the availability of succulent fruits and young leaves at the offset of rains in May. However, similar to findings from Fongoli (Pruetz 2006), the proportion of trees in fruit was highest during the dry season, with the peak in March and April, although this availability is not reflected in feeding records of Bandafassi chimpanzees, which might be related to their food selectivity.

Some results were published in Pan Africa news, and more presented at the last IPS meeting:

<https://www.asp.org/ips/ips2012/abstractDisplay.cfm?abstractID=3918&confEventID=4242>

Chimpanzees in a savanna landscape

Despite the rarity of closed-canopy habitat, chimpanzees were most often observed in gallery and ecotone forest (35.8% used vs. 8.1% available), in different woodland types (closed 22.5%, open 15.6% and bamboo 8.4%), on plateaus (3.2 vs. 19.5%), in wooded grassland/shrubland (2.6 vs. 20%) and along fields (8.6% of contacts). The following figure clearly indicates chimpanzees' preference for forested habitats, especially for nesting (>82%), and these vegetation types are also most heavily exploited by humans, particularly herders (see Massa 2011, unpublished Ma. thesis).

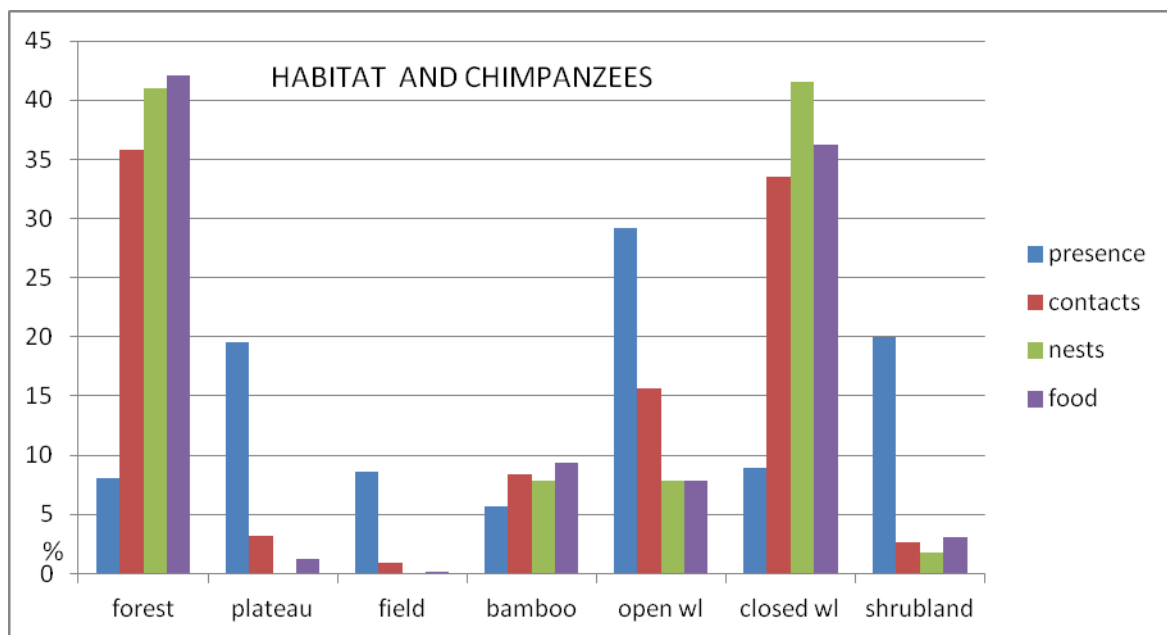


Figure 1: Habitat composition/ available vegetation types compared with chimpanzees' usage (nests, feeding remains, sightings)

Encounters with chimpanzees

Overall the average party-size of various chimpanzee groups encountered was 8.3 individuals (range 1 – 26, SD=5.2). While these numbers are estimates, typically they are conservative. The following results stem only from the study-sites: detailed data was collected during 352 contact episodes. The largest daily parties of chimpanzees were seen at AN (on average 9.8 individuals), followed by NA (8.6), while the smallest parties were encountered at BF (6). These results are comparable with nesting-group sizes at study sites, likely well reflecting actual size differences in daily-parties for study sites.

Table 1	OBSERVED PARTY-SIZE				NESTING GROUP- SIZE			
	total	Angafou	Bandafassi	Nathia	total	Angafou	Bandafassi	Nathia
average	8,3	9,8	6	8,6	6,4	7,7	4,3	6,5
minimum	1	1	1	2	1	1	1	1
maximum	26	22	14	26	22	22	8	15
SD	5,2				4,2			

Typical group demography was 3.9 males, 2.2 females, 2.3 juveniles, and 1.8 infants; averages for different sites are similar, although the community at Angafou indicates the presence of more males. Interestingly chimpanzees at AN exhibited relative acceptance of observers through time and regularly nest in gallery forest along the stream, while Nathia community seem to have a vast home-range and use it seasonally, similar to Fongoli with the only habituated community of savanna apes (Pruetz *et al.*, in preparation).

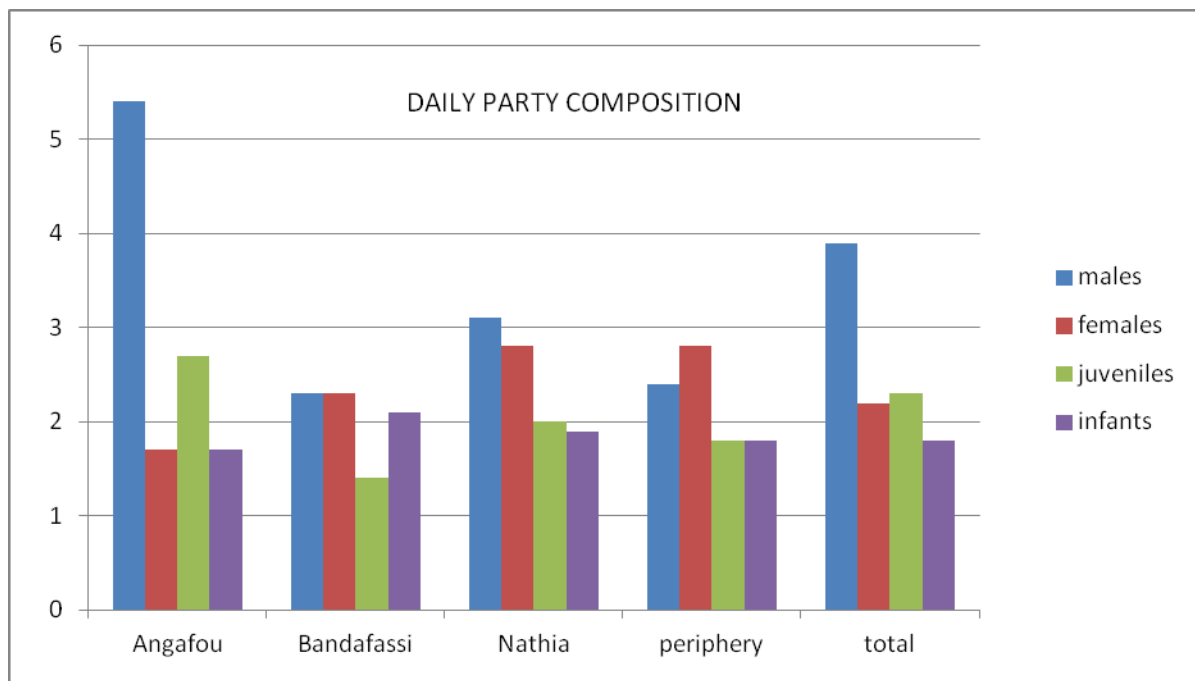


Figure 2: Chimpanzee demographic profiles in Bandafassi arrondissement

I compared the activity budget of chimpanzees at three main sites, although the results are conservative, since the subjects are not habituated and thus not observed from nest to nest. Typically apes were feeding upon sighting (71.6% overall), foraging and traveling (pooled 18.6%), drinking (3.4%) resting (4.3%), nesting (1.1%) and other (0.9% social behaviors).

ACTIVITY BUDGET COMPARED							
Table 2	feed	forage	travel	rest	nest	drink	social
Angafou	68,4	11,8	11,2	2,7	2,6	2	1,3
Bandafassi	72,4	4,6	9,2	4,6		9,2	
Nathia	75	5,3	11,8	5,3		1,3	1,3
periphery	74,9	6,3	9,4	9,4			
total	71,6	8	10,6	4,3	1,1	3,4	0,9

The most common reaction of apes in general was to leave the location (48.1% overall), but interestingly they ignored us and indicated curiosity more often over time (26.2% and 12.8% respectively). However, important differences in reactions occurred among three sites with different human-chimpanzee relations. The apes indicated fear in only 9.6% of all episodes, but much more pronounced at periphery sites (31.3%). Nathia chimpanzees exhibited less fear than other communities and often ignored researchers during contacts, while only apes at BF often displayed at human observers (10.8%, less at AN- 1.3% in last 6 months).

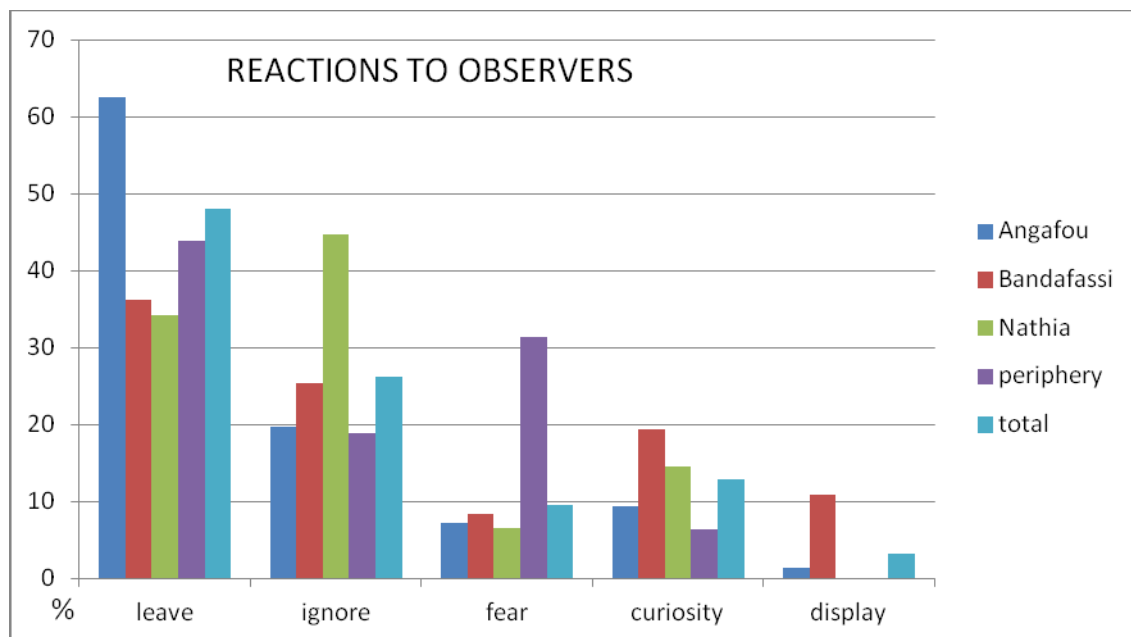


Figure 3: Comparison of chimpanzee reactions to human observers among three main sites and two periphery zones

Nesting survey

Nesting provides an important insight into group social structure and is “a good mirror to species-specific behavior” (Fruth & Hohmann 1996). Overall we collected data on 1031 nests

according to Pruetz *et al.* (2002), found in 230 nesting sites. Most of the nests were fresh (58.3%), followed by recent (20.5%) and old (19.8%) nests, while only 1.5% of all nests were decomposed (nest frame visible only). Similar to encounters with chimpanzees, their nests were most often found in closed woodland habitat (41%), patches of ecotone and gallery forest (pooled 41.5%), bamboo and open woodland (each in 7.9%), and a few in wooded grassland (1.8% of all nests). The overall nesting group-size was 6.4 (range 1-22, SD=4.2; AN average 7.7, N=473 nests, NA 6.5, N=253; BF 4.3, N=248). The average height of nesting trees was 14 m (2 – 38 m), and the average nest height was 9.4 m (0 – 30 m). We also found several ground nests at Nathia (1.3%), while habitual nest-site reuse occurred often in general and particularly at Angafou. Chimpanzees used at least 55 tree species for nesting, but primarily selected *Pterocarpus erinaceus* (27.4 % of nests), an important food source for chimpanzees as well. Sadly this tree is also most often pruned by nomadic shepherders, who ruthlessly cut already impoverished forests.

Table 3: Trees used for nesting and food by chimpanzees, herders' impact

Tree species	Family	% nests	Chimp food	Herders
<i>Pterocarpus erinaceus</i>	Fabaceae	26.7	Bark, leaves	high
<i>Diospyros mespiliformes</i>	Ebenaceae	8.7	Fruits, leaves	
<i>Khaya senegalensis</i>	Meliaceae	8	Fruits	high
<i>Parkia biglobosa</i>	Mimosaceae	7.3	Pods	
<i>Cola cordifolia</i>	Sterculiaceae	6.1	Fruits	
<i>Piliostigma thonningii</i>	Caesalpinaceae	5	Pods,	
<i>Ficus spp.</i>	Moraceae	4	Fruits, leaves	high
<i>Lannea spp.</i>	Anacardiaceae	3.9	Fruits,	
<i>Nauclea latifolia</i>	Rubiaceae	2.2	Leaves,	
<i>Adansonia digitata</i>	Bombacaceae	1.8	Fruits, flowers, leaves	
<i>Vitellaria paradoxa</i>	Sapotaceae	1.1	Fruits, leaves	medium

Of savanna animals, humans and trees

Among tree species used by chimpanzees as food or for nest construction several were also cut by transhumant shepherds; e.g. *Bombax costatum*, *Khaya senegalensis*, *Acacia spp.*, *Ficus spp.*, and *Zizyphus spp.* (see Massa 2011). Transhumant herders were in fact most often encountered in the field, cutting trees for their large flocks of sheep (100-300 w/2-4 herders); occasionally we met village boys with dogs presumably hunting birds, while the collection of baobab, tamarind and *Saba senegalensis* fruits by local people (mostly women and children) occurred as a seasonal activity. Beside foreign sheep and local goats, cows are often seen foraging in the bush near or far from human settlements. Wild animals are not so often seen (charismatic megafauna is almost extinct in Senegal, the remains are present in PNNK), although large predators such as crocodile (*Crocodylus niloticus*), spotted or laughing hyenas (*Crocuta crocuta*) and grey or slender jackals (*Canis aureus anthus*) were sometimes encountered at Nathia and hippopotamus is regularly seen in River Gambia. Bushbuck (*Tragelaphus scriptus*), warthog (*Phacochoerus aethiopicus*), crested porcupine (*Hystrix cristata*) and banded mongoose (*Mungos mungos*) were relatively often encountered. Of the primate species, patas (*Erythrocebus patas*) were most often noted (22.5 % of mammal sightings), followed by Guinea baboon (*Papio papio*) and vervet or green monkey (*Chlorocebus sabaenus*); while bushbabies (*Galago senegalensis*), hunted by Fongoli chimpanzees, were usually spotted beside roads or paths in the evenings and early mornings.

The diet of Bandafassi chimpanzees

Chimpanzee diet in this area is species typical and dominated by fruit (72.3%) and other plant parts, although contains a few peculiar sources (see table). So far, 63 plant species from 22 families were detected in their food repertoire. The most important species are *Adansonia* and *Saba*, their various parts eaten in every season, followed by several *Ficus spp.*, *Pterocarpus*, *Hannoa*, *Diospyros*, *Tamarindus*, *Zizyphus* and *Piliostigma*. Additionally, insects (termites, driver and weaver ants together in 1.8%), underground storage organs and honey (each in <1% of records), along with signs of geophagy (0.2%) were recorded. Unexpectedly we also found traces of feeding on mushrooms and assistants at BF observed apes consuming bats at the cave entrance on three occasions, while *Chiropteran* and *Galago sp.* remains were also found in faeces. The figure below presents the currently known diet composition of

chimpanzees in Bandafassi arrondissement, based on observations (48.1%), feeding remains (38.1%) and faecal analysis (13.8%).

part eaten	% of records
fruit	72,3
Pods	5,6
nuts	2,3
pith	3,5
bark	8,6
insects	1,8
leaves	2,3
USO	0,8
honey	0,9
flowers	1,2
soil	0,2
meat	0,5
mushrooms	0,3



Discussion

Scrambling for common resources

This research added some nuts (e.g. monkey cola – *Cola laurifolia*, oil-palm nuts – *Elais guinensis* and raphia nuts), that need to be cracked-open, succulent fruits from the forests at Angafou and Ségou (not all identified yet), mushrooms, underground-storage-organs (a tuber named “kapé” and a bulb “baka” in Pulaar) and bats to the food repertoire of savanna chimpanzees, known only from Fongoli (Pruetz 2006). Many of the chimpanzee food sources are also commonly used by local humans for various purposes, while at least five of their key feeding items are highly exploited commercially (e.g. *Adansonia digitata*, *Saba senegalensis*, *Tamarindus indica*, *Parkia biglobosa*, *Cola cordifolia*) and several are unsustainably cut by immigrant shepherds. From the 63 chimpanzee plant foods, 21 are also eaten by local humans, 9 species are used as medicine and 19 occur in domestic use (e.g. housing, carpentry, ritual masks, etc.). Finally, we recorded several instances of overt competition for resources, causing significant conflicts between humans and apes. At Bandafassi, chimpanzees were sometimes capturing goats from villagers, and this behavior was likely prompted by the absence of wild animals, otherwise hunted by apes. At Angafou mango

orchards were often raided and in 2010 a juvenile chimpanzee became “domesticated” and was eventually killed by dogs. In May 2012 the apes also supposedly crop-raided peanuts from the fields close to the park and destroyed village beehives. Such “deviations” probably reflect responses to the impoverished environment, where human rivals have encroached apes and extremely reduced the presence of savanna fauna and flora.

Signs of behavioral adaptations and material culture

Chimpanzees in Bandafassi arrondissement in general seem to use natural shelters in the form of rock caves for feeding and resting, perhaps on the same ground as the Fongoli community (Pruetz 2007), i.e. for thermoregulation during the maximum heat. The small community ranging at Etchoar and a large one at Nathia also exhibit percussive technology during feeding on baobab fruits, and we also found plant tools for harvesting termites (*Macrotermes sp.*). In total I analyzed 45 probes in 7 termite-fishing assemblages: the tools were on average 36.3 cm long (range 19 – 57 cm) with an average of 2.9 mm in diameter. On the other hand, smaller mushroom-shaped mounds were found smashed on the ground, while along the hand-dug wells in the stream we found four wooden sticks that could be used as digging tools. The same type of implement was possibly used to obtain an onion-like bulb (“baka”). The community ranging along the stream of Angafou apparently uses plant probes for harvesting termites and smashes them on the ground. In 2012 chimpanzees were also observed to collect driver ants (*Dorylus sp.*) with sticks. I analyzed 15 dipping wands: their average length was 78.7 cm (49 – 124 cm) and the average diameter 5.8 mm.

Interestingly, we found signs of previously unknown type of tool use in West Africa (and only recently discovered in the Eastern savanna site of Ugalla; Hernandez-Aguilar *et al.* 2007): digging sticks to obtain tubers. Stout sticks (app. 50 cm long) were found three times and digging behavior seen by our assistant SF. Kanté, although it accounts only as an anecdote thus far (Sarringhaus *et al.* 2005). The same can be said about the other surprising behavior of savanna chimps (known from Fongoli); e.g. soaking in rain-ponds, which is said to occur at Angafou as well. Anyhow, preliminary findings from Bandafassi chimpanzees are somewhat intriguing, due to rarity of detected behaviors such as hunting bats, which likely demands significant skills and intelligence and has not been observed before. Admittedly we have to be cautious in accepting this peculiar foraging pattern and further observations are needed to proceed from anecdotal status, but feeding on bats and mushrooms has been noted

in chimpanzee sister species, the bonobo (Bermejo *et al.* 1994). It does seem that savanna milieu triggers innovative strategies in our closest relatives and their adaptations show foraging versatility, needed for the evolution of complex behaviors. Additionally, their use of harsh arid habitat has implications for the reconstruction of early hominin diffusion with comparable ecological challenges. Nest-site reuse and repeated visits to water sources and prized food plants create focal points in the landscape and has clues for ranging behavior and the origin of home bases in early human evolution. Similar patterns of chimpanzee land use and nesting were recently recorded in eastern African savannas (Hernandez-Aguilar 2009).

Conservation initiatives

Chimpanzees' responses to observers appear to be influenced by their experience with local people, who are the crucial element for their conservation. This project was first accorded by several village chiefs who recommended us the guides for our field prospection and after first 15 months of research we presented the preliminary results of our collaborative efforts at the informal reunion at Nathia. The results are also regularly communicated with Eaux et forêts department of Senegalese Ministry for environment which accords our research. As of July 2012, five field assistants, serving as eco-rangers, monitor the most important chimpanzee sites: the surroundings of Nathia village (Ingey and Lorie streams by Nambura Diallo), Etchoar and other hill-slopes above Bandafassi (Gilbert Camara), the stream of Angafou at Landé (Samba Faye Kanté); along with Sangola, Thiarmalel and sites at the periphery of PNNK (Khadim Diallo), and Itato – Marewa, closest to Guinea (Omar Diallo). The two buffer-zones are important in terms of recognizing the existing forest-corridors available for possible gene-transfer between detected chimpanzee communities. Nature-culture tourism program, including forest guardians, could be an alternative solution to the complex relationship between the species, while habituating the apes sympatric with humans is not recommended (see MacFie & Williamson 2009). Our conservation initiative should be adapted to savanna context and could include local traditional customs related to primates (initiation rites) and nature hiking with the chance of limited chimpanzee viewing, particularly at Angafou and less at Etchoar. Due to the seemingly enormous home-range of chimpanzees at Nathia (similar or larger to Fongoli's 80 km²), the presence of large predators (hyenas and jackals), and the ascribed healthy community, I introduced the camera-trapping study at this site (in collaboration with Max Planck Institute that provided the material), but

the effort was aborted after 7 months due to apparently high human pressure and disturbing presence of domestic animals (e.g. cattle).

Conclusions

This project covers the widest geographical area in Senegal (>500 km²) with at least five chimpanzee communities in rare forest patches, some perhaps exchanging genes through sparse forest corridors. Due to intense habitat degradation savanna apes are more endangered than ever. However, preliminary estimates from surveys undertaken by S. Ndiaye in May 2011 are encouraging and indicate the Senegalese population is stronger than thought and numbers up to 500 chimpanzees. In fact, two of our main study areas (Angafou and Nathia) were recognized as priority sites for chimpanzee conservation at the last Wula Nafaa meeting (see the report by colonel Ndiaye). We established a “diminutive surveillance system” such as Carter’s in Guinea or further East in Senegal. Identified forest-guardians or eco-rangers monitor the ranging behavior of chimpanzees and at the same time prevent crop-raiding and attacks on domestic animals. The conflict over goats and mango fruits at was approached and partly resolved in a similar manner (since the behaviors did not occur when researchers were present in the field). However, those activities depend on continuous funding for more local people to protect their indigenous resources, and more scientific support for research projects would be beneficial. We continue to monitor sites at the periphery zones to better understand the relation between humans and apes in a seasonally disturbed habitat. Finally the area is at the border with Guinea and should be included in collaboration between neighbor countries.

To conclude, the foundations for the sustainable community-based chimpanzee conservation in Bandafassi arrondissement are laid, but its working members remained without solid support and alternatives are sought for. Besides eco-tourism as a conservation incentive I would suggest sustainable harvesting of wild resources (particularly *Saba* and baobab) and include the products in international fair-trade, organize workshops on bio-horticulture (eco-gardening, seed-bank) and use of traditional medicinal plants. Chimpanzees at Bandafassi live in small isolated communities along increased population of humans, who are vital for their protection. Along involvement of local authorities, there is an urgent need for law enforcement and incorporation of international agencies to ensure the project success.

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