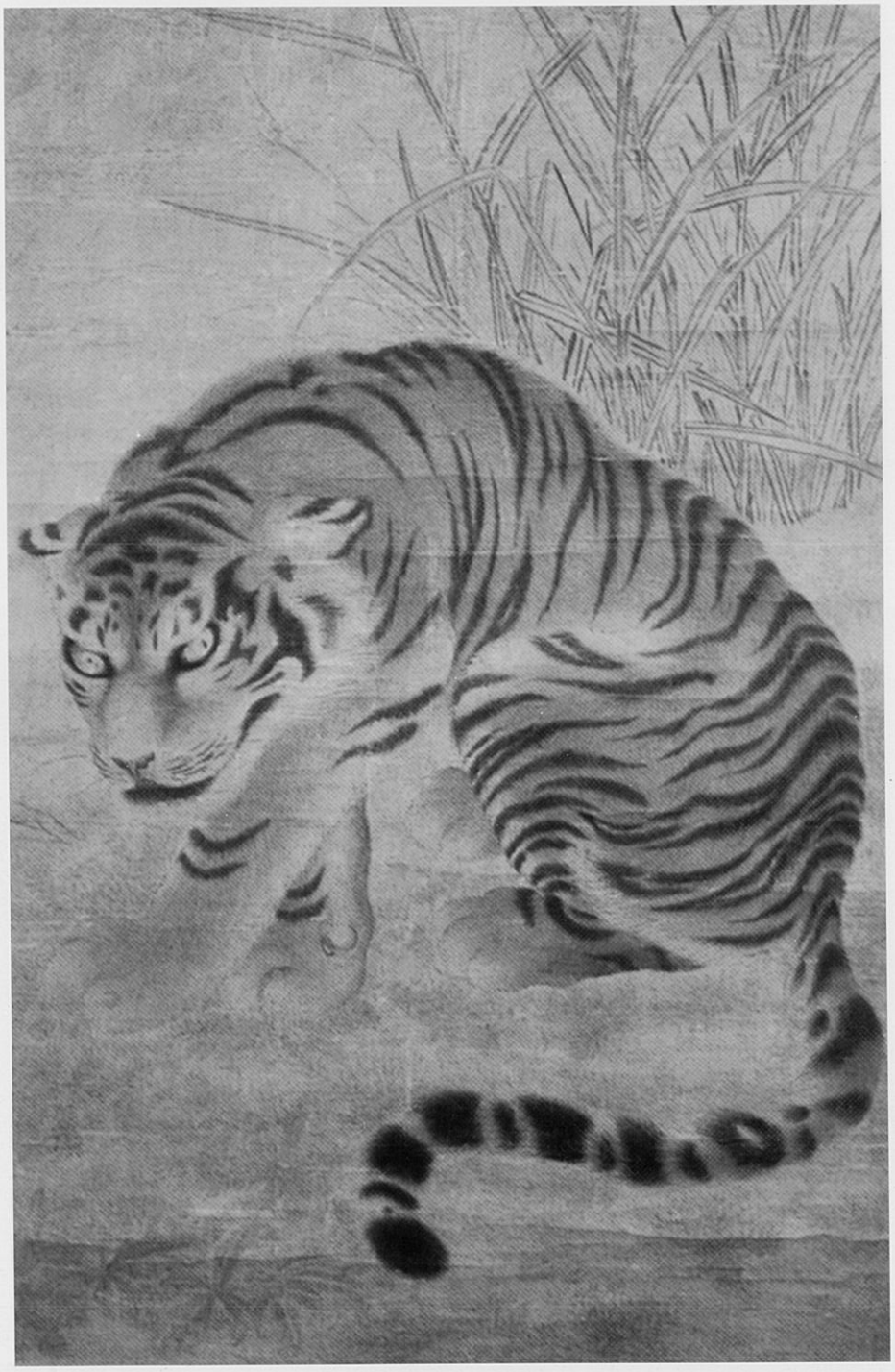
South China Tiger (*Panthera tigris amoyensis*) Studbook Analysis & Masterplan Report - 1995

Suzhou, China



After Chen Juzhong (early 13th century), British Museum

中 国 动 物 园 协 会
Chinese Association of Zoological Gardens

South China Tiger
Studbook Analysis & Masterplan

Chinese Association of Zoological Gardens

October 1995

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Within China additional copies of the *South China Tiger Studbook Analysis and Masterplan* can be requested through the Chinese Association of Zoological Gardens, 9 San Li He Avenue, Bai Wanzhuang, Beijing 100835, P.R. China (fax: +86-10-8313213).

Outside of China, additional copies of the *South China Tiger Studbook Analysis and Masterplan* can be ordered through the International Tiger Information Center, c/o Minnesota Zoo, 13000 Zoo Blvd., Apple Valley, MN 55124 (fax: 1-612-431-9452). Send checks for US $35.00 (for printing and shipping costs) payable to the Asian Tiger Fund.

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中国动物园协会
CHINESE ASSOCIATION OF ZOOLOGICAL GARDENS

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January 18, 1995

Mr. Ronald Tilson
CBSG Global Tiger Coordinator
FAX-612-431-9452

Respected Mr. Ronald Tilson:

Thank you for your fax letter of December 15.

We appreciated your concern on the conservation of rare south China Tiger and your effort on the possibility of holding a South China Tiger captive population masterplan workshop in China. This workshop has been in the list of our working plan. You and experts you suggested are welcome to offer your advice and to help us with our work concerned.

This workshop will be the first meeting specialized on South China Tiger to us. There are several issues we like to make sure.

A. The site of the workshop and its content.

It is decided that the workshop is to be held in Suzhou, Jiangsu province. Suzhou zoo holds the biggest population with 8 living individuals. The studbook for South China Tiger will be completed beforehand. A draft of South China Tiger conservation plan will be developed for the meeting also.

The following items are hoped to complete during the meeting.
(1)the establishment of the studbook
(2)the analysis for the status of endangered of basic of studbook
(3)the conservation action plan for South China Tiger

With regards to immobilizing animals, tattooing, medical checking, collection of blood, we believe that it is not possible to carry this process out during the meeting because a part of zoos in China say "No' so far. The further coordinating effort needs to be done for our association. This process is probably conducted when the experts concerned visit China next time, if this meeting is hold successfully.

B. The date of the workshop

You proposed that the workshop opens at May first when you were in Hong Kong. If it can be possibly changed to the end of April it will be more convenient for us. Your final decision on when to hold is being waiting.

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C. The cost of the workshop

It is estimated through our preliminary budget that 10,000 US dollars is needed for the meeting. The most of budget was made to cover in-country expenses of travel, lodging and meals for foreign experts. The needed budget has been proposed for approval. We are not sure that this amount of money will be permitted at the secretary-generals meeting of CAZG. I wonder if you can probably cover a part of your own expenses in China by the our secretary - general meeting? If you can, it will help me to convince others.

D. If you agree to the above workshop arrangement, please tell us how many people will come and who they are. With such information, we will send invitation letters to them.

With best regards.

Yours sincerely,

Zheng Shu Ling

Zheng Shuling
Director of CAZG's office

姑蘇晚報

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今日上午快讯

本报讯（记者 **沈玲** 通讯员 **周峥**）今天上午，由中国动物园协会主办、苏州市园林管理局协办的《中国华南虎移地保护研讨会》在南林饭店开幕，来自“世界自然与自然资源保护联盟”濒危物种委员会主席等官员（专家），中国建设部、中国动物园协会、各有关城市的专家领导等参加了会议。

中国华南虎是中国特有的珍稀动物，但因气候、地理、环境的变化，目前，在自然界中已难见踪影，在中国各地动物园中也仅存三十多只。为挽救这一濒临绝种的野生动物，我国从八十年代起就开始致力于华南虎的移地保护繁殖研究。经专家们的努力及各级政府的支持，近年来，华南虎的移地保护繁殖已取得重大突破。其中，苏州动物园的保护繁殖工作成绩尤为显著。1983年起苏州动物园先后引进1对种虎进行移地保护研究。仅1988年—1995年7年时间内，一对种虎就连续繁育虎仔31头，特别是在1992年一对种虎繁殖9头，存活7头，创造了一对种虎年繁殖率的世界记录。并建立3对后备种虎，今年3对后备种虎已进入生殖期。这一成就引起了中国乃至世界动物学界的注目。在去年11月份召开的东南亚动物园协会年会上，“世界自然与自然资源保护联盟”提出要协助中国保护华南虎。这次会议旨在提高全民保护珍稀动物华南虎的意识，并将对如何移地保护好这一“濒危物种”商定一些具体政策与措施。

Gusu Evening Newspaper
Suzhou, China, 24 April 1995

"South China Tiger Conservation Efforts at Suzhou Zoo is Focus of Global Attention: South China Tiger *Ex Situ* Conservation Workshop Held in Suzhou"


中国华南虎移地保护研讨会 1995·4 苏州

Executive Summary

Ronald Tilson and Kathy Traylor-Holzer

China is unique from all other tiger range countries in that it has three of the living tiger subspecies within its borders: the Siberian tiger (*Panthera tigris altaica*) in the far northeast that borders Russia and North Korea; the South China tiger (*Panthera tigris amoyensis*) in the central parts of China, which is considered the evolutionary antecedent of all tigers; and the Indochinese tiger (*Panthera tigris corbetti*) in the far south bordering Vietnam and Lao PDR.

The current status of wild South China tigers is vague. Only 40 years ago it was reputed to number more than 4,000, but was declared a pest by the government and hunted mercilessly. Over 3,000 tiger skins have been counted, which essentially eliminated the subspecies in China. A 1987 field survey by Chinese scientists reported a few tigers remaining in the Guangdong mountains bordering Hunan and Jiangxi, and another survey five years later noted evidence of about ten isolated tigers in the remote mountains of Guangdong, Hunan, and Fujian Provinces, South China. No tigers were seen. The only sightings were anecdotal, stories from old hunters who quit the business, or so they say. A recent unconfirmed report from the Ministry of Forestry suggests that the wild population is fewer than 20 individuals.

The current situation is that no wild tigers have been seen anywhere by officials in more than 20 years, and the last wild tiger brought into captivity occurred 20 years ago. There are 21 reserves listed by the Chinese Ministry within the presumed range of the tiger, but no evidence that tigers are still present. The captive population of 48 South China tigers is confined to China. They are descended from only six wild-caught tigers (about 120 tigers descended from 30 wild-caught tigers is more ideal), so the situation is not look good for the future. These facts suggest that the South China tiger is the rarest of the five living tiger subspecies, the most threatened, and the closest to extinction.

Thus, of the five remaining subspecies of tigers, it is the South China tiger (*Panthera tigris amoyensis*) that is in most need of conservation action for both wild and captive populations. During the May 1991 joint meeting of the IUCN/SSC Conservation Breeding Specialist Group, IUCN/SSC Cat Specialist Group and American Zoo and Aquarium Association (AZA) Felid Taxon Advisory Group, the status of the South China tiger was recognized as "critical" based on the Mace-Lande criteria; critically threatened populations have a 50% probability of extinction within five years or two generations.

In 1986 an IUCN/SSC sponsored international symposium concerned with *World Conservation Strategies for Tigers* recommended that captive management programs based upon long-term conservation goals in support of the recovery of wild populations should be encouraged in the regions where the subspecies naturally occurs. This recommendation was strengthened in the 1993 CBSG *Tiger Global Animal Survival Plan* (GASP), which set as a goal to assist in the development of organized tiger captive management programs in tiger range countries.

In 1994 at the annual Southeast Asia Zoo Association (SEAZA) meeting in Hong Kong, the Chinese Association of Zoological Gardens (CAZG) invited the IUCN/SSC Conservation Breeding Specialist Group (CBSG) to assist them in the development of a South China tiger captive management program. At that time the *International Tiger Studbook* listed 36 living South China tigers, with no births reported since 1985. Studbook pedigrees indicated that the captive population was derived from 6-8 wild caught founders, and no new founders had been brought into captivity since 1971. No South China tigers, either wild or captive, are found outside of China.

The first step in the CAZG South China Tiger Program was initiated by a week-long evaluation of the four primary Chinese zoos holding South China tigers: Guangzhou, Chongqing, Shanghai and Suzhou. The CBSG team was comprised of Ronald Tilson (CBSG Tiger GASP Coordinator), Kathy Traylor-Holzer (Tiger GASP Studbook Advisor), Jansen Manansang (Indonesian PKBSI Sumatran Tiger Co-Coordinator), and Zhao Qingguo (CAZG), our guide and interpreter. Specific goals were to evaluate tiger physical facilities, tiger husbandry and medical management procedures, and diets at each zoo, and to verify origin and parentage of each tiger through inspection of animal records and conversations with zoo staff. These records were then used to update the *Chinese South China Tiger Studbook* initiated by Li Yinghong (Chongqing Zoo) to perform population analyses at the masterplan workshop.

During the second week, the South China Tiger Masterplan Workshop was held at Suzhou Zoo, attended by representatives from 14 of the 20 zoos holding South China tigers, the CAZG Office in Beijing, city officials from Suzhou, and CBSG. The workshop began with brief opening ceremonies of welcome from the Vice Mayor of Suzhou, the Ministry of Construction, the Suzhou Zoo, the CAZG, and the CBSG. There were three presentations by Chinese zoo staff on tiger husbandry issues, including a detailed presentation by Huang Gong Qing on the management of tigers at Suzhou Zoo's South China Tiger Breeding Facility. Jansen Manansang's presentation on the development of the Indonesian Zoological Parks Association's program for Sumatran tigers provided a useful model for the CAZG. Subsequent presentations by CBSG presented the organizational template on how to develop the South China tiger masterplan on a regional and global level. The CAZG then presented their ideas on developing a conservation strategy for the South China tiger.

The second day was spent in three activities. Three working groups were established. One, facilitated by Wang Bingluo and Ronald Tilson, addressed husbandry and medical issues; the second, facilitated by Wang Menghu and Ulysses Seal (CBSG Chair) addressed issues relating to animal identification, institutional records and training requirements. A third, facilitated by

Li Yinghong and Kathy Traylor-Holzer, compared institutional records to resolve inconsistencies and complete information on all births, deaths and transfers in the South China tiger studbook database. A subsequent plenary session integrated results of these discussions that formed the basis for developing the masterplan and its recommendations.

The first working group on **Record Keeping** suggested that more consistent record-keeping by each zoo, a complete and accurate studbook, and technical training in a number of zoo disciplines are essential for the development of a competent captive management program for the South China tiger. The issues for records are individual animal identification, standardized records in the zoos, an accurate studbook, a studbook numbering system, a studbook record keeping system, and tiger pedigree verification. Training needs include: medical and dental care, nutrition, husbandry, genetic analysis, assisted reproduction (electroejaculation, genome banking and artificial insemination), semen and sperm analysis, and animal transport.

The second working group on **Management and Animal Health Programs** noted that various zoos have different methods for managing tigers. Some zoos need more training in tiger management and tiger health programs than other zoos. In order to develop standardized techniques in all aspects of managing tigers, which includes immobilizations, physical examinations, disease analysis, vaccinations, parasites, dental problems, pathology, nutritional analysis and record keeping, it was decided that protocols addressing these issues that are contained in the American Zoo and Aquarium Association's (AZA) Tiger Husbandry Manual (*Management and Conservation of Captive Tigers*, 1994) be adoptable for use in Chinese zoos.

The **Studbook Working Group** reported that the number of South China tigers in the database was tripled from only 76 individuals in the *International Tiger Studbook* to 264 individuals by the completion of their verification process. Many of these additions were from neonatal deaths, which are required to evaluate demographic trends, management issues and evidence of inbreeding depression in the population. Inconsistencies in the database were resolved by direct communication with and among institutional representatives, a process that could not have been accomplished by mail or through intermediaries. The recommendation was made that the revised studbook be renumbered and submitted to the International Tiger Studbook Keeper, replacing the current version prepared from limited data made available to him. This revised *South China Tiger Studbook* will be submitted with the official endorsement of the CAZG and CBSG.

Based upon demographic and genetic analyses of the studbook, possible population management strategies and recommendations were discussed. Workshop participants then set specific five- and ten-year goals to minimize the loss of genetic diversity in the captive population. An exercise evaluating the current and potential carrying capacity of the CAZG zoos was integrated into this process which demonstrates that there is sufficient space within the participating zoos to meet the 5 and 10 year goals, negating the need to construct a centralized tiger breeding facility. It will be necessary, however, to improve tiger facilities and enclosures within the participating Chinese zoos in quantity and quality. These issues were integrated with the results of the working group discussions to form the basis of the recommendations in the *CAZG South China Tiger Masterplan.*

Discussions during the third day yielded a set of priorities and recommendations, prepared in Chinese and English, which was revised and supported by all workshop participants. On the fourth day an action plan for 1995-1996 was also developed. These documents will be submitted to the CAZG for translation and further development. The final document will be reviewed at a CAZG-sponsored meeting to establish the South China Tiger Management Committee. The final product, the *CAZG South China Tiger Masterplan* and workshop recommendations, will be translated into Chinese and distributed to all Chinese zoos upon final approval of the CAZG.

The *South China Tiger Masterplan* is designed to contribute toward further conservation action for the South China tiger, including the coordination of a Population and Habitat Viability Assessment (PHVA) for wild tiger populations through the appropriate Chinese department and development of a *South China Tiger Conservation Strategy* for linking captive and wild populations. The South China tiger captive program is vital for the prevention of the loss of genetic diversity and the extinction of this subspecies. The CAZG *ex situ* tiger program will be an essential part of the recovery of the wild population. It will be necessary to conduct a PHVA for the wild South China tiger population before any decisions can be made on how to integrate *ex situ* and *in situ* tiger programs. The bringing to maturity of this regional captive management program may also serve as a model for other CAZG captive management programs for endangered species in China. By acting now while animals are still present in the wild, we have the potential and the resources to act effectively to prevent possible extinction of the South China tiger. ■

South China Tiger Masterplan Recommendations

Based upon demographic and genetic analyses of the studbook, possible population management strategies and recommendations were discussed. Workshop participants then set specific five- and ten-year goals to minimize the loss of genetic diversity in the captive population. An exercise evaluating the current and potential carrying capacity of the CAZG zoos was integrated into this process which demonstrates that there is sufficient space within the participating zoos to meet the 5 and 10 year goals, negating the need to construct a centralized tiger breeding facility. It will be necessary, however, to improve tiger facilities and enclosures within the participating Chinese zoos in quantity and quality. Record keeping by the zoos, a studbook, and technical training are needed as the basis for the captive management of the South China tiger in Chinese Zoos for conservation of this subspecies. These issues were integrated with the results of the working group discussions to form the basis of the recommendations in the *CAZG South China Tiger Masterplan.*

Tiger Identification

Methods used to identify individual tigers include its morphology, enclosure where it is kept, keeper recognition, tattoos and transponders. The use of tattoos and transponders requires immobilization of the animals and availability of the tattoo device, transponders and readers. The tattoo and transponder provide a permanent record which can last the life of the animal. This information would be recorded in the studbook and in the zoo records.

Recommendation 1: Tattoo and install a transponder in all important tigers (this excludes very old tigers). This could be done during the visit of the South China Tiger Project Team when the animals would be handled for medical evaluation.

Tiger Verification

Recommendation 2: Tigers whose pedigree or origins from wild caught tigers are uncertain should be analyzed by using DNA techniques for verification of subspecies and lineage. The biomaterial samples for these analyses could be collected during medical examinations. Researchers and laboratories in China, and financial support for doing the analyses, need to be identified. An animal-by-animal review of the studbook data needs to be performed to identify tigers requiring DNA analysis for origin verification.

Studbook Records

A regional studbook for the South China tiger will be maintained in China by the Chongqing Zoo, which will designate and support a staff person as the studbook keeper. It was agreed that SPARKS be used for maintaining the Studbook and doing the genetic, demographic, and other analyses for the management and breeding program.

Recommendation 3: The printed reports from SPARKS need to be produced in Chinese. This could be done by programming the printed report programs of SPARKS. The CBSG Tiger Program will provide a copy of SPARKS to be used in this program. Only the software modules that produce the printed reports need to be reprogrammed in Chinese; the menu screen programs do not need to be reprogrammed. These reprogrammed printer modules would be applicable to any species data maintained in SPARKS. This approach would not affect the data and analysis algorithms.

Studbook Numbers

Studbook data for South China tigers in the *International Tiger Studbook* kept at the Leipzig Zoo in Germany includes 76 animals. This information is not complete for all animals in Chinese zoos and contains some errors. A corrected studbook is being prepared during this workshop and will be used by the Chinese studbook keeper to prepare and maintain a current studbook for South China tigers. A revised and corrected studbook will be provided to the International Tiger Studbook Keeper.

Recommendation 4: A South China Tiger Studbook will be maintained in China and updates will be submitted annually to the International Tiger Studbook Keeper. The Chinese Studbook Keeper will submit new International Studbook numbers to replace the current studbook numbers listed in the International Tiger Studbook. These studbook numbers will be permanent and will not be changed at a future date. CBSG and the Tiger GASP will provide cover letters in support of these changes when the new South China Tiger Studbook is submitted.

Zoo Records

Recommendation 5: Each CAZG zoo will maintain complete records and communicate this information to the South China Tiger Studbook Keeper. Studbook records include birth date, location, parents, rearing information, transfers, death date, and all related information. Additional information should include medical care, diet, behavior, breeding efforts, and diseases. The studbook information is sent in writing to the studbook keeper at least annually. The studbook keeper also sends a written annual report and questionnaire (from SPARKS) to each zoo. This includes all of the information on the tigers in the zoo for checking, correction, and updating, which is then used to update the studbook.

Staff Training

Technical training for CAZG staff working with tigers is needed in medical and dental evaluation, immobilization, tiger identification techniques, nutritional analysis, disease evaluation and treatment, reproductive evaluation, genome resource banking, genetic analysis, husbandry, sanitation and disease prevention.

This training program can be initiated and assisted with a project to gather data on all of the South China tigers as a part of the species management program. It could begin with a visit by the South China Tiger Project Team to immobilize, identify (with tattoos and transponders), and evaluate medically and reproductively tigers in the South China tiger captive management program. The objective of the training would be to have zoo staff be able to perform all of the basic procedures by themselves after the training.

Recommendation 6: Tigers in the South China tiger program need to evaluated in 1995-96 if the goals of the program are to be achieved. Biological samples will be collected for disease evaluation, genetic analysis, nutritional evaluation, and reproductive evaluation. The South China Tiger Project Team will be invited to visit China in 1995-96 to initiate this part of the South China Tiger Program.

Tiger Management and Animal Health Programs

Various zoos have different levels of understanding of how to manage tigers. Some of the zoos need more training in tiger management and tiger health programs than other zoos. In order to develop standard techniques in all of the aspects of managing tigers (immobilizations, physical examinations, disease analysis, vaccinations, parasites, dental problems, pathology, and record keeping), it was decided that protocols addressing all of these issues as contained in the AZA Tiger Husbandry Manual be adoptable for use in Chinese zoos. This manual is available from the Minnesota Zoo, Conservation Office, 13000 Zoo Blvd., Apple Valley, MN 55124, USA.
Recommendation 7: The CAZG zoos will adopt management, medical health and pathology protocols outlined in the AZA Tiger Husbandry Manual. Training in these protocols can occur during visits by the South China Tiger Project Team.

In general, most zoos feed their tigers a combination of chicken and beef meat, some zoos add eggs, plant material, and most add vitamins, minerals, and bone meal. The general physical condition of tigers in Chinese zoos seems excellent. For example, Suzhou Zoo has already set high standards of food preparation, storage and feeding of tigers. However, because dietary deficiencies may contribute to either neonatal deaths or decreased reproduction, it was suggested that the diet be analyzed for trace mineral deficiencies.
Recommendation 8: A nutritional analysis of the tigers' diet should be performed. This can be accomplished as part of the South China Tiger Project Team visit.

In order to increase reproductive options for the South China tiger, to analyze genetic issues, and to evaluate risks of disease in captive tigers, several programs need to be established.
Recommendation 9: Establish a Genome Resource Bank, a DNA Bank, and a blood serum bank, as well as a database of baseline values for healthy South China tigers. These

biomaterials will belong to the Chinese Association of Zoological Gardens. The South China Tiger Project Team will assist the CAZG in initiating these programs during their visit to China.

As part of the *South China Tiger Masterplan*, the CAZG should develop a Timetable for Action which specifies the tasks that need to be completed during the next 12 months to initiate the masterplan, which includes the task, the person or group responsible for the task, and a date to accomplish it."

South China Tiger Timetable for Action

1) A draft (in English) of the *South China Tiger Masterplan* will be submitted by CBSG (R. Tilson) to the Chinese Association of Zoological Gardens (CAZG):
By 1 June 1995

2) The *South China Tiger Studbook* will be submitted by Chongqing Zoo (Li Yinghong) to CBSG along with a cover letter from CAZG officially endorsing the studbook; CBSG and the Tiger GASP will add cover letters also endorsing the studbook and will submit it to the International Tiger Studbook Keeper, Leipzig, Germany:
By 1 June 1995

3) CAZG will review the draft of the masterplan, translate the revised document into Chinese, and submit the revised masterplan in both English and Chinese to CBSG (R. Tilson) for publication:
By 1 July 1995

4) The CAZG South China Tiger Management Committee will be formed:
By 1 September 1995

5) Presentation of the *South China Tiger Masterplan* by a CAZG representative should take place at the following meetings:
   - 1995 CBSG Annual Meeting in Dublin, Ireland; **28 Sept.-1 Oct.**
   - 1995 SEAZA Annual Meeting in Taipei, Taiwan; **16-20 October**
   - 1995 CAZG Meeting in Beijing, China; **26-30 October**

6) The South China Tiger Project Team is requested by CAZG to visit China to evaluate tigers and to train zoo staff in tiger husbandry and medical procedures. Ronald Tilson will submit possible dates to the CAZG office, and CAZG will make the final selection of the project dates.

7) The CAZG South China Tiger Management Committee will meet to determine breeding recommendations for the CAZG South China Tiger Program:
By November 1995

Captive Population Analysis

Ulysses Seal

All known living South China tigers are in China. The wild population may be less than 20 animals and is at high risk of extinction. The captive population consists of 48 animals descended from 6 founders. There were 18 wild-caught animals as potential founders, with 16 collected between 1955 and 1960. A comprehensive South China tiger studbook has been prepared in SPARKS by the Chinese regional studbook keeper in collaboration with representatives from all of the holding zoos. The details were reviewed with staff from each of the zoos at the South China Tiger Workshop in Suzhou, 24-27 April 1995. New studbook numbers, location, age, sex, parents, and inbreeding coefficients of the living animals are listed in Table 1 and the age pyramid in Figure 1.

There are 245 tigers in 109 litters born in Chinese zoos recorded in the South China tiger regional studbook. The sex ratio at birth is recorded at 126 males and 89 females (M/F = 1.42) with 30 of unrecorded sex. The mean litter size was 2.25. Mortality in zoo born animals during the first 30 days was 45% and was similar for males and females. Adult mortality is about 4-5% from years 4-12 and then rapidly increases in animals 13 years and older. The maximum age recorded is about 24 years in females. The calculated generation time for males was 10.2 years and for females 7.6 years reflecting the survival and breeding of a few fertile males in the population. The annual growth rate from 1963-1994 was about 6% for males (r = 0.059, lambda = 1.06) and 8% for females (r = 0.078, lambda = 1.08) (Table 2).

The living South China tiger population includes 30 males and 18 females. There are no living founders or wild caught animals in the population. The last two wild caught animals (SB #25 & #26) entered the captive population 29 (1966) and 25 (1970) years ago. The unbalanced sex ratio in the living population (M/F = 1.67) is primarily the result of a higher proportion of males born and was augmented by higher male survival rate in the years 2-4 (Table 2, Figure 2). The population size grew about 10% per year between 1971 and 1984 (Table 3, Figure 3) with a 5-fold increase in numbers. There was a small decline between 1984 and 1990 followed by another increase for two years and again a decline to the present number of 48 animals. Over the entire history of the population, the annual growth rate has been about 7% (lambda = 1.07) (Table 3). However the growth rate over the interval from 1985 to 1995 has been close to zero (Table 4). Over this interval the population was sustained by the reproduction at Shanghai and Suzhou zoos.

Comparison of demographic events at the three zoos (Shanghai, Suzhou and Guangzhou) which produced 40 of the 44 litters born from 1985-1995 (Table 5) indicates significant differences in litter size, neonatal mortality and overall survival. The sex ratios are biased towards males at

birth and were comparable at Shanghai and Suzhou which recorded the sexes of all births. It is possible that this male-biased sex ratio at birth is a result of inbreeding. A biased sex ratio is not present in either the Siberian or Sumatran tiger captive populations.

The mean litter size at Suzhou is nearly double that at the other institutions and is higher than that for captive born Siberian and Sumatran tigers (2.36 cubs/litter). However we have not analyzed other captive tiger data for the possibility that litter size varies consistently between breeders. Larger litter sizes have been reported for wild Bengal tigers (*P.t. tigris*) in Nepal. This subspecies has the highest levels of molecular genetic variation of all the tiger subspecies tested. The litter sizes at the other two institutions are low relative to the Siberian tiger as well. Consideration needs to be given to subtle nutritional effects and to inbreeding depression.

The differences in neonatal mortality or survival rates between institutions are significant. The adult animals appear in good condition and are in clean facilities. Nutrition appears to be adequate with provision of mineral and vitamin supplements to a meat and chicken diet. None of the institutions have a vaccination program for their tigers. The loss of several litters at Suzhou was attributed to a period of cold weather. Thus, it is possible that the lower cub mortalities at Suzhou can be further decreased with modifications of the denning facility and a vaccination program. The losses at Guangzhou may be a consequence of inbreeding depression and disease. Their survival rates with Siberian tiger (*P.t. altaica*) litters have been higher. Necropsy data on South China tiger cubs are lacking and are needed. Serology studies on the adults are also needed to provide guidance on endemic diseases. Reproductive evaluation of the population, particularly the males, may assist in evaluating the impact of inbreeding depression.

In summary, the combination of a biased birth sex ratio, low mean litter sizes and high neonatal mortality in several breeding groups suggest that inbreeding depression may already have reduced the fitness of this captive population of the South China tiger. There is an urgent need for necropsy data on possible morphological defects and on diseases. Morphological, cardiac, disease, and reproductive evaluation of the living animals would also assist evaluation of the status of the population and guide further management recommendations.

It should be noted that all tiger reproduction at Suzhou is from one pair of animals (SB# 157♂ and 147♀) and most of the reproduction with poor survival at Guangzhou is from a single pair of parents (SB# 119♂ and 120♀). Both sets of parents are inbred and are themselves siblings leading to a further increase in inbreeding in their offspring (see Appendix for pedigrees and analyses for the breeders at the three institutions). The living population is highly inbred with a mean inbreeding coefficient of 0.244 (Tables 1 & 6), which reflects its origins from only 6 founders with 4-5 generations of captive breeding. Founder representation is uneven, with two animals (SB# 3♂ and 26♀) contributing 64% of the representation. Management of the breeding program would allow an increase in the fraction of wild gene diversity retained from 0.785 to 0.871 and slow the rate of inbreeding in the population. Expansion of the captive population could also aid slowing the rate of loss of genetic heterozygosity.

The genetic analyses available in the SPARKS and GENES computer programs allow selection of animals for breeding to assist in achieving the genetic objectives of the program. The relationships of all animals to each other in the living population are summarized in the mean kinship coefficient. This number, combined with a calculation of the inbreeding coefficient in the offspring which would result from the mating, provide guidance in selecting animals for mating. These analyses were done on the final version of the studbook prepared at the Suzhou Workshop. The results are summarized in the Appendix. Four of the living males (SB# 94, 103, 110, & 119) and six of the living females (SB# 50, 75, 111, 120, 140, & 141) are considered too old or in poor condition for breeding by workshop participants and were removed from the managed populationk, and thus from the calculations. This results in a potential population of breeding animals of 26 males at 18 institutions and 12 females at 8 institutions. It will be important to do morphological, disease, and reproductive evaluations for these animals since they can provide vital information as a part of the evaluation of the population.

Population goals for the South China tiger captive population management program depend upon the conservation objectives. Since the wild population is critically small, has been small for many years and is at high risk of extinction, a captive population is essential for the survival of this subspecies and for maintaining the currently available genetic variation of the subspecies. The potential for reintroduction appears low in the near future (10-20 years). It will be important to conduct a Population and Habitat Viability Assessment (PHVA) to evaluate the status of the wild population, its potential habitat, the likely future of the tiger population and the habitat, and the potential to obtain additional genetic material for the captive population while managing the wild population for expansion.

A possible recommendation for the captive population was to retain 90% of the current genetic heterozygosity present in the captive population for 100 years. This is a span of about 14 captive tiger generations and would result in rate of loss of heterozygosity of about 0.7% per generation.

Evaluation of the conditions and captive population sizes required to meet this goal suggest that it can be accomplished with a captive population size of 110 to 130 animals (Tables 7 - 15). The population parameters which determine the population size needed are generation time, annual growth rate, effective size of the current population, and Ne/N ratio. Since about 20% of the diversity present in the founders has already been lost, it is not possible to retain 90% of heterozygosity present in the original wild population 30 years ago. Thus we start the calculations with the objective of retaining 90% of the genetic heterozygosity present in the current living population.

All of these parameters can be modified through management actions. Thus generation time can be increased by delaying the age of first reproduction, the population growth rate by controlling the number of litters born each year and decreasing cub mortality, and effective population size by equalizing family sizes across all of the breeders. The results of these calculations using the CAPACITY program (available from Jon Ballou or CBSG) indicate sufficient flexibility to allow year-to-year management based upon events during the previous year. A population growth rate of 5-10% per year (population doubling time of 7-14 years), the current generation time of 8

years, and a Ne/N ratio of 0.6 would require a final population size of about 110 animals to achieve the program goals. This population size could be reached gradually over a period of 10-16 years and would then be maintained at this level for the remainder of the 100 years.

Summary and Recommendations

The South China tiger is at high risk of extinction in the wild and there is currently no effective program for its recovery. The small wild population is rapidly losing genetic diversity which cannot be recovered. The captive population is likely the primary resource for the survival and recovery of this tiger subspecies. Effective scientific management of this captive population has a high priority in China and globally for the survival and recovery of this subspecies.

1) Manage the captive South China Tiger population to retain 90% of the current genetic heterozygosity for 100 years.

2) Increase the captive tiger population to 110-120 animals over the next 10-16 years through a scientifically managed breeding program to minimize the loss of founder representation and loss of genetic heterozygosity.

3) Implement the recommendations of the South China Tiger Masterplan Workshop for evaluation of all of the animals in the living population as a basis for management and breeding recommendations.

4) Establish the basis for the high neonatal mortality in some of the collections and take steps to reduce it to an average level of 20-30% per year. Do serology studies on the living population to evaluate its disease exposure status and establish a vaccination program for the population.

5) Undertake an animal-by-animal management approach for the breeding program to achieve the genetic and demographic goals of the program. To achieve the demographic goals of the program (5-10% annual growth rate) it will be necessary to do sufficient pairings to produce 6-8 surviving cubs (to the age of one year) each year. This may require 8 pairings (2 of 3 pairings produce a litter in Siberian tigers) to produce 6 litters with an average of 2.0 to 2.2 cubs per litter. This would yield 12-13 cubs, which, with a 50-60% survival rate to one year, results in 6-8 cubs reaching one year of age to add to the population. Annual mortality in the animals greater than one year of age is about 7% which means a loss of 2-4 animals per year, so the net growth with 6-8 one-year-old cubs will be about 10% per year over the next 5 years.

6) It may be necessary to consider genetic supplementation of the captive population if the effects of inbreeding depression are established. It will be very important to secure additional genetic material from the wild population if this can be accomplished within the overall conservation goals for the species.

7) Collect and store semen samples from all living adult male South China tigers, especially animals with low mean kinship values. This material, stored in a genetic resource bank, can be used to restore and maintain some of the genetic heterozygosity that will be lost to the population on the death of these animals. This genetic material will be important to maintain as much of the founder genomes as possible."

Table 1 **Inbreeding Coefficient Report**
SOUTH CHINA TIGER Studbook

axon Name: **PANTHERA TIGRIS AMOYENSIS**

tud #	Sex	Age	Sire	Dam	Location	Death Date	Inbreeding
75	Female	18Y,9M,25D	27	29	NANNING		0.1250
94	Male	16Y,4M,17D	38	51	NANNING		0.2500
103	Male	15Y,7M,24D	38	51	KUEIYANG		0.2500
110	Male	15Y,0M,26D	27	26	XIAMEN		0
111	Female	15Y,0M,26D	27	26	SHANGHAI		0
119	Male	14Y,5M,3D	65	75	CANTON CH		0.1875
120	Female	14Y,5M,3D	65	75	CANTON CH		0.1875
127	Male	13Y,10M,22D	38	51	BAOTING		0.2500
136	Male	13Y,0M,5D	27	79	NANCHONG		0.2500
140	Female	13Y,0M,0D	38	51	SHANGHAI		0.2500
141	Female	13Y,0M,0D	38	51	CHUNGKING		0.2500
147	Female	12Y,0M,14D	112	73	SUCHOU		0.2187
151	Male	11Y,10M,5D	27	101	CHICHIHAL		0.2500
155	Male	~11Y,4M,1D	112	73	FUCHOW		0.2187
157	Male	11Y,1M,15D	112	73	SUCHOU		0.2187
170	Female	9Y,11M,7D	38	51	SHIH CHIA		0.2500
172	Male	9Y,11M,7D	38	51	SUCHOU		0.2500
175	Female	9Y,11M,2D	27	101	KUEIYANG		0.2500
183	Male	~9Y	112	73	HEFEI		0.2187
199	Male	7Y,1M,20D	65	75	LUOYANG		0.1875
200	Female	7Y,1M,20D	65	75	LUOYANG		0.1875
208	Male	6Y,11M,0D	69	111	SHANGHAI		0.1875
209	Female	6Y,11M,0D	69	111	SHANGHAI		0.1875
215	Male	6Y,0M,19D	157	147	CANTON CH		0.3750
216	Female	6Y,0M,19D	157	147	CANTON CH		0.3750
226	Male	4Y,10M,2D	157	147	SHANGHAI		0.3750
227	Male	4Y,10M,2D	157	147	CHUNGKING		0.3750
229	Female	4Y,9M,15D	69	111	CHUNGKING		0.1875
228	Female	4Y,9M,15D	119	120	CANTON CH		0.3593
233	Male	4Y,1M,7D	157	147	NANTONG		0.3750
234	Male	4Y,1M,7D	157	147	SHIH CHIA		0.3750
235	Male	4Y,1M,7D	157	147	TIANJIN		0.3750
236	Male	3Y,10M,28D	69	111	SHANGHAI		0.1875
237	Male	3Y,10M,28D	69	111	SHANGHAI		0.1875
238	Male	3Y,10M,19D	69	140	SHANGHAI		0
241	Female	3Y,2M,12D	157	147	SUCHOU		0.3750
242	Male	3Y,2M,12D	157	147	SUCHOU		0.3750
243	Male	3Y,2M,12D	157	147	CHANGCHUN		0.3750
244	Male	3Y,2M,12D	157	147	SHENZHEN		0.3750
246	Male	2Y,11M,5D	155	64	NANPING E		0.2656
247	Female	2Y,11M,5D	155	64	FUCHOW		0.2656
248	Male	2Y,10M,10D	69	140	WUHAN		0
250	Male	2Y,10M,10D	69	140	NANNING		0
251	Female	2Y,6M,8D	157	147	SUCHOU		0.3750
252	Male	2Y,6M,8D	157	147	SUCHOU		0.3750
253	Female	2Y,6M,8D	157	147	SUCHOU		0.3750
256	Female	1Y,1M,13D	226	140	SHANGHAI		0
257	Male	11M,4D	157	147	FUCHOW		0.3750

Specimens listed in birth date order.

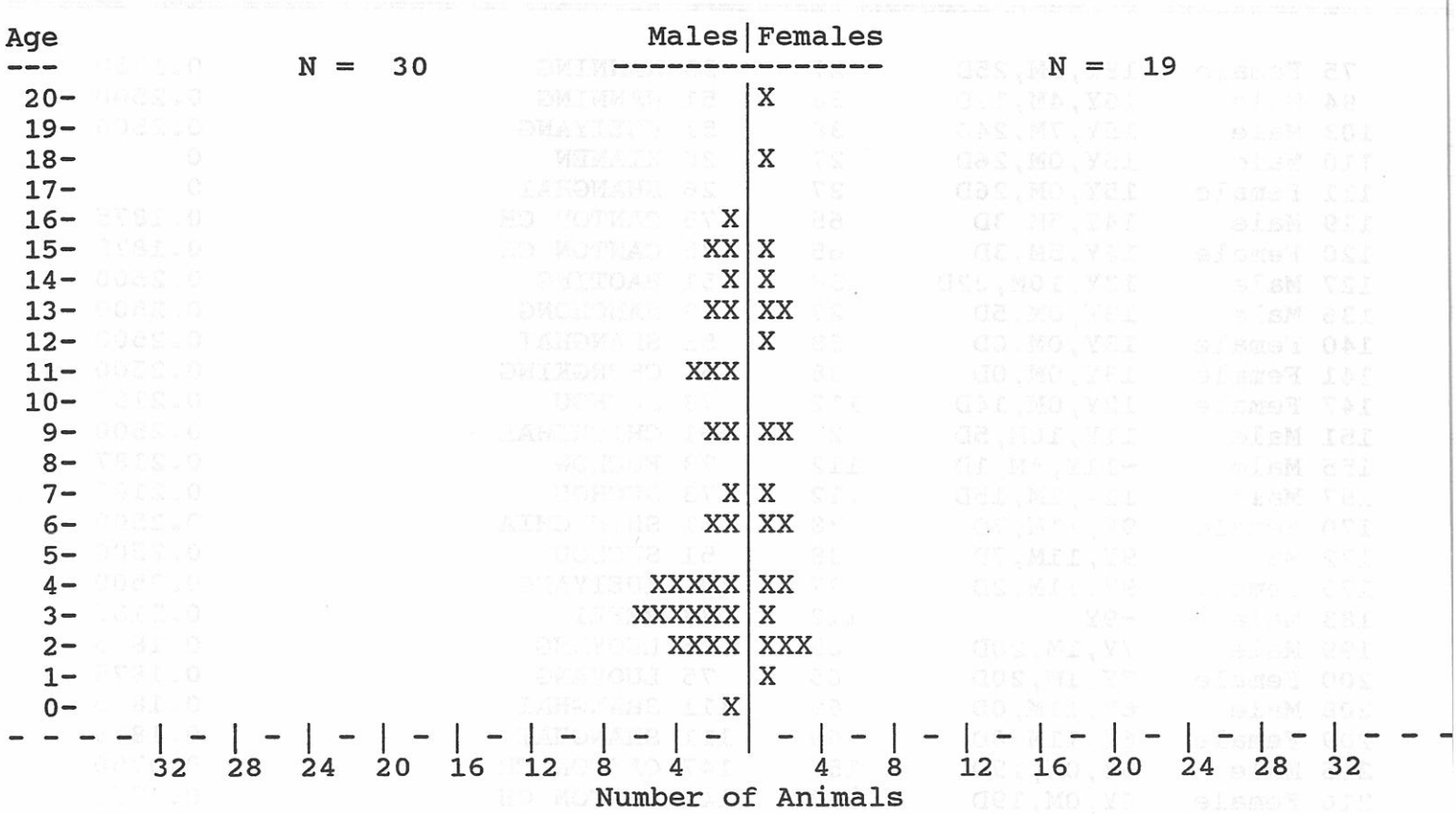
Figure 1

Age Pyramid Report

Restricted to: SOUTH CHINA TIGER Studbook

Status: Living by 1 May 1995

Taxon Name: **PANTHERA TIGRIS AMOYENSIS**



X >>> Specimens of known sex...

? >>> Specimens of unknown sex...

Table 2

Fecundity and Mortality Report
SOUTH CHINA TIGER Studbook

Taxon Name: **PANTHERA TIGRIS AMOYENSIS**

	Fecundity [Mx]...				Mortality [Qx]...			
Age Class	Male	N	Female	N	Male	N	Female	N
0- 1	0.00	81.2	0.00	61.0	0.39	170.4	0.36	128.1
1- 2	0.00	66.1	0.00	52.0	0.09	73.8	0.10	62.8
2- 3	0.03	58.7	0.06	44.6	0.05	61.0	0.10	48.1
3- 4	0.08	52.7	0.16	36.9	0.02	60.9	0.11	41.2
4- 5	0.18	45.0	0.42	34.6	0.00	47.0	0.00	36.6
5- 6	0.32	42.6	0.42	33.0	0.09	45.0	0.00	33.0
6- 7	0.23	36.9	0.45	32.0	0.05	38.5	0.06	32.0
7- 8	0.42	33.6	0.63	27.6	0.00	34.5	0.04	28.1
8- 9	0.36	31.8	0.34	26.5	0.06	34.0	0.07	27.0
9-10	0.31	29.3	0.63	24.5	0.00	29.8	0.04	24.9
10-11	0.43	27.0	0.57	21.9	0.11	28.2	0.04	23.2
11-12	0.41	22.1	0.48	20.8	0.08	24.3	0.05	20.8
12-13	0.40	20.0	0.08	19.0	0.00	20.0	0.05	19.0
13-14	0.28	17.6	0.10	15.2	0.11	18.9	0.12	16.4
14-15	0.20	15.0	0.19	13.4	0.06	15.5	0.00	13.5
15-16	0.21	11.8	0.00	12.4	0.15	13.0	0.21	14.1
16-17	0.80	8.1	0.00	10.0	0.21	9.4	0.07	14.1
17-18	0.33	6.1	0.11	9.0	0.14	7.0	0.00	9.0
18-19	0.65	3.9	0.00	7.0	0.50	6.0	0.21	9.4
19-20	0.67	3.0	0.00	4.7	0.00	3.0	0.41	7.4
20-21	0.23	2.2	0.00	3.0	0.55	3.6	0.33	3.0
21-22	0.00	0.4	0.00	2.0	1.00	0.4	0.00	2.0
22-23	0.00	0.0	0.00	1.5	0.00	0.0	1.00	2.0
23-24	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0
24-25	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0

T = 10.195
Ro = 1.834
lambda=1.06
r = 0.059

T = 7.635
Ro = 1.813
lambda=1.08
r = 0.078

30 day mortality: 45%
(102 deaths out of 226 arriving within 30 days of birth date)

245 birth events to known age parents tabulated for Mx...

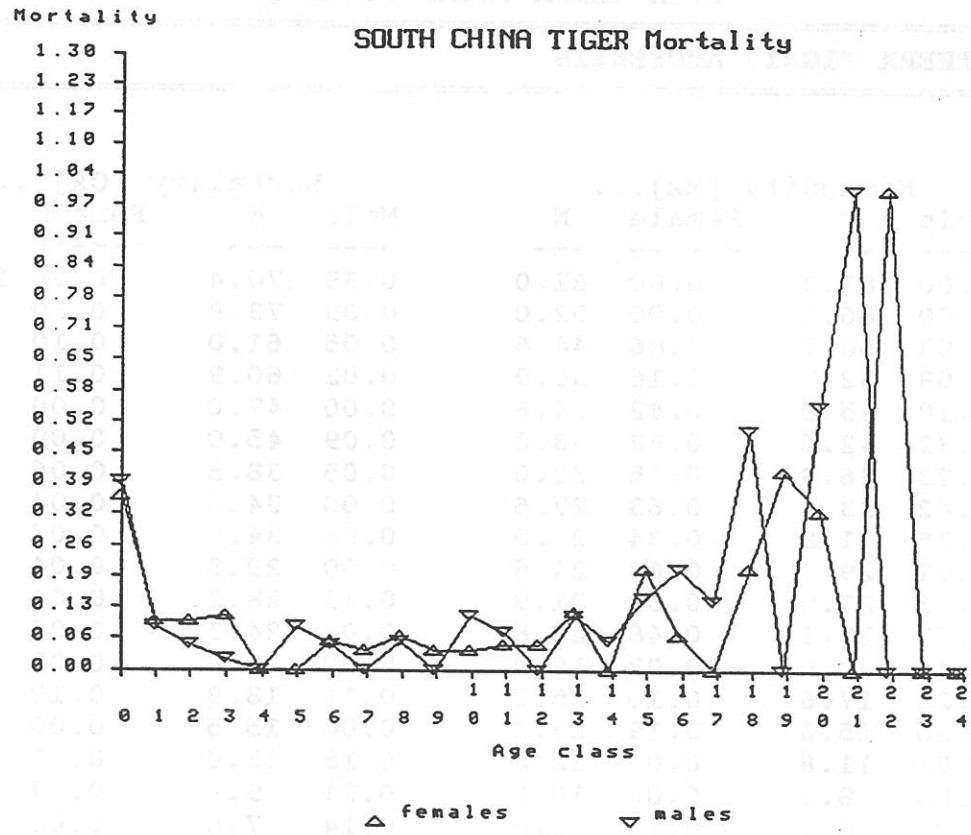
191 death events of known age tabulated for Qx...

WARNING: Values with small sample sizes (N) warrant less confidence...

Compiled by: Li Yinghong, Chongqing Zoo thru Captive Breeding Specialist Group
Data current thru: 28 Apr 1995

SPARKS v1.3
1 May 1995

Figure 2


Mortality
SOUTH CHINA TIGER Mortality
1.30
1.23
1.17
1.10
1.04
0.97
0.91
0.84
0.78
0.71
0.65
0.58
0.52
0.45
0.39
0.32
0.26
0.19
0.13
0.06
0.00
0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4
Age class
females
males

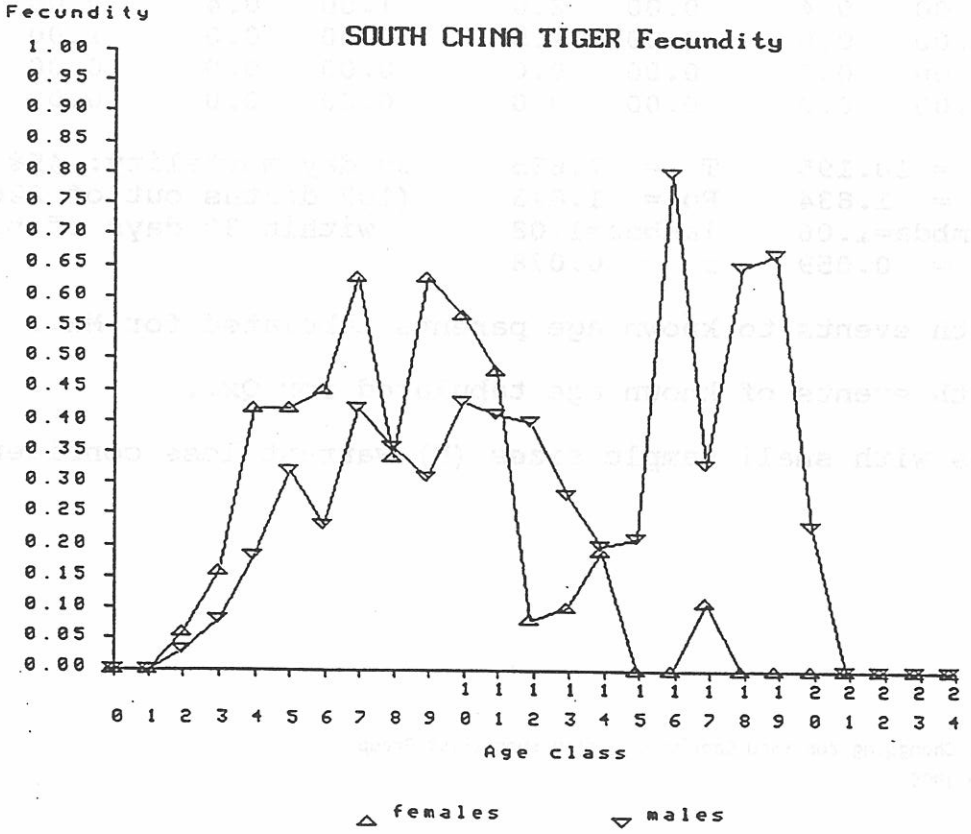

Fecundity
SOUTH CHINA TIGER Fecundity
1.00
0.95
0.90
0.85
0.80
0.75
0.70
0.65
0.60
0.55
0.50
0.45
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4
Age class
females
males

Table 3

Census Report

estricted to: SOUTH CHINA TIGER Studbook

Dates: As of End of date <= 31/12/1994

Year as of 31 Dec	Specimen Counts		Observed Lambda Annual	Geometric Mean
1994	31.20.0	(51)	0.94	
1993	34.20.0	(54)	0.95	0.95 (last 2 yrs)
1992	35.22.0	(57)	1.19	1.02 (last 3 yrs)
1991	28.20.0	(48)	1.07	1.03 (last 4 yrs)
1990	25.20.0	(45)	0.98	1.02 (last 5 yrs)
1989	28.18.0	(46)	0.96	1.01 (last 6 yrs)
1988	29.19.0	(48)	1.02	1.01 (last 7 yrs)
1987	27.20.0	(47)	1.00	1.01 (last 8 yrs)
1986	27.20.0	(47)	0.98	1.01 (last 9 yrs)
1985	27.21.0	(48)	0.96	1.00 (last 10 yrs)
1984	27.21.2	(50)	1.06	1.01 (last 11 yrs)
1983	25.21.1	(47)	1.02	1.01 (last 12 yrs)
1982	27.17.2	(46)	1.15	1.02 (last 13 yrs)
1981	24.16.0	(40)	1.03	1.02 (last 14 yrs)
1980	23.16.0	(39)	1.11	1.03 (last 15 yrs)
1979	20.15.0	(35)	1.13	1.03 (last 16 yrs)
1978	17.14.0	(31)	0.91	1.02 (last 17 yrs)
1977	18.16.0	(34)	1.21	1.03 (last 18 yrs)
1976	16.12.0	(28)	1.12	1.04 (last 19 yrs)
1975	16.9.0	(25)	1.09	1.04 (last 20 yrs)
1974	14.9.0	(23)	1.21	1.05 (last 21 yrs)
1973	11.8.0	(19)	1.46	1.06 (last 22 yrs)
1972	6.7.0	(13)	1.44	1.08 (last 23 yrs)
1971	3.6.0	(9)	1.00	1.07 (last 24 yrs)
1970	3.6.0	(9)	1.00	1.07 (last 25 yrs)
1969	3.6.0	(9)	0.90	1.06 (last 26 yrs)
1968	4.6.0	(10)	1.00	1.06 (last 27 yrs)
1967	4.6.0	(10)	0.77	1.05 (last 28 yrs)
1966	4.9.0	(13)	1.08	1.05 (last 29 yrs)
1965	4.8.0	(12)	1.20	1.06 (last 30 yrs)
1964	4.6.0	(10)	1.11	1.06 (last 31 yrs)
1963	4.5.0	(9)	1.50	1.07 (last 32 yrs)
1962	3.3.0	(6)	1.00	1.07 (last 33 yrs)
1961	3.3.0	(6)	1.00	1.06 (last 34 yrs)
1960	3.3.0	(6)	1.00	1.06 (last 35 yrs)
1959	3.3.0	(6)	2.00	1.08 (last 36 yrs)
1958	1.2.0	(3)	3.00	1.11 (last 37 yrs)
1957	0.1.0	(1)	1.00	1.11 (last 38 yrs)
1956	0.1.0	(1)	1.00	1.11 (last 39 yrs)

Note: Lambda values include Imports and Exports...

Compiled by: Li Yinghong, Chongqing Zoo thru Captive Breeding Specialist Group

Data current thru: 28 Apr 1995

SPARKS v1.3

1 May 1995

Figure 3

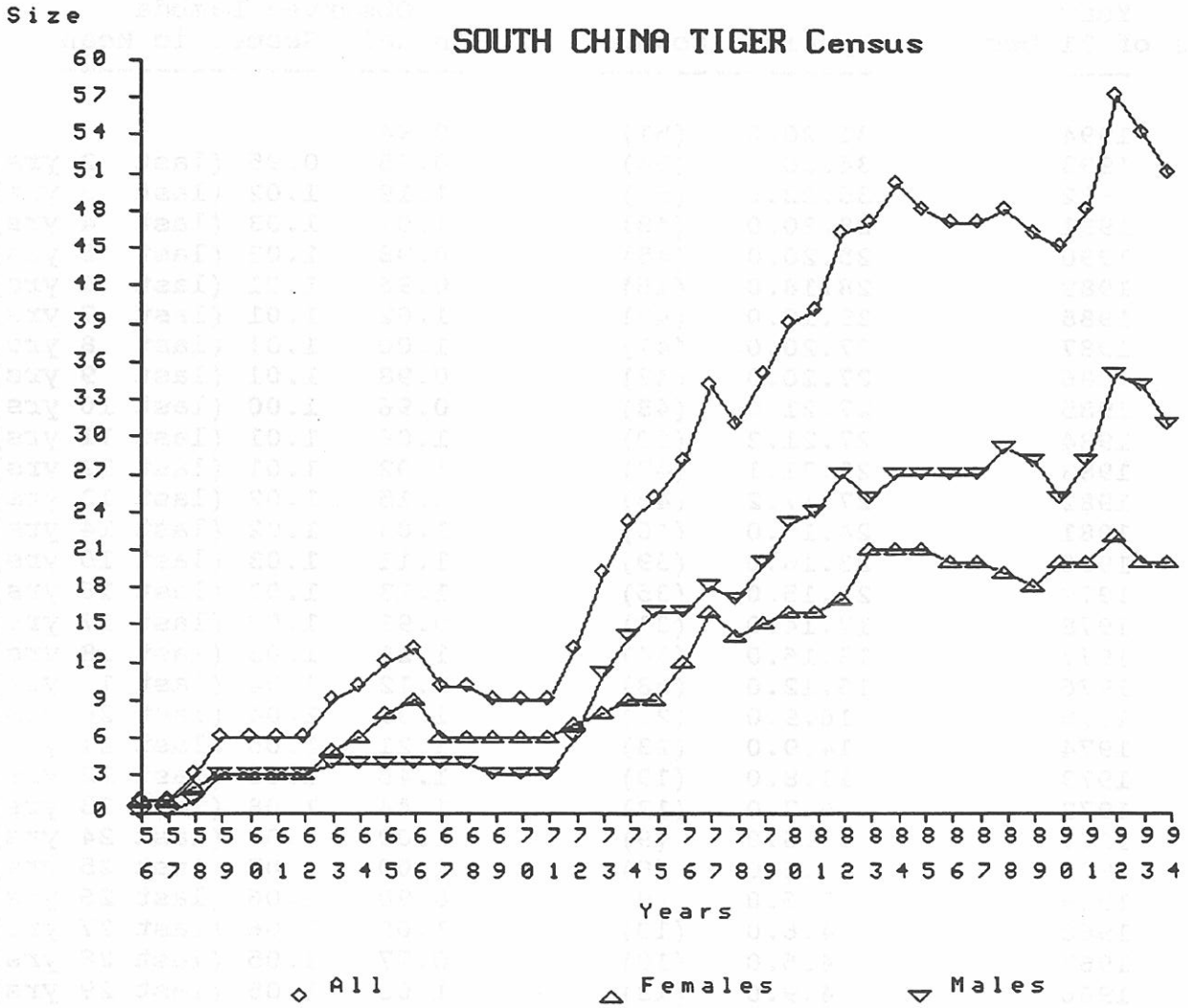

SOUTH CHINA TIGER Census
Size
60
57
54
51
48
45
42
39
36
33
30
27
24
21
18
15
12
9
6
3
0
55 55 55 56 66 66 66 66 66 66 66 66 67 77 77 77 77 77 77 77 77 78 88 88 88 88 88 88 88 89 99 99 99
67 89 01 23 45 67 89 01 23 45 67 89 01 23 45 67 89 01 23 45 67 89 01 23 45 67 89 01 23 45 67 89 01 23 4
Years
All
Females
Males

Table 4 **Fecundity and Mortality Report**
estricted to: SOUTH CHINA TIGER Studbook
Dates: During 01/01/1985 <= date

axon Name: **PANTHERA TIGRIS AMOYENSIS**

	Fecundity [Mx]...				Mortality [Qx]...			
Age Class	Male	N	Female	N	Male	N	Female	N
0- 1	0.00	30.4	0.00	18.9	0.47	61.1	0.56	45.6
1- 2	0.00	27.4	0.00	17.1	0.15	30.2	0.07	21.1
2- 3	0.00	24.7	0.00	14.9	0.04	25.2	0.06	16.8
3- 4	0.02	21.1	0.20	12.4	0.07	22.3	0.26	13.6
4- 5	0.26	17.6	0.38	11.8	0.00	17.6	0.00	11.8
5- 6	0.32	20.4	0.54	12.1	0.05	22.1	0.00	12.1
6- 7	0.15	19.9	0.42	12.0	0.10	20.9	0.00	12.0
7- 8	0.32	17.1	0.64	10.1	0.00	17.5	0.00	10.1
8- 9	0.29	17.2	0.44	11.3	0.00	17.9	0.00	11.3
9-10	0.08	17.7	0.43	12.9	0.00	18.2	0.08	13.2
10-11	0.34	18.9	0.53	11.4	0.10	19.5	0.00	11.4
11-12	0.09	16.2	0.55	12.6	0.11	18.4	0.00	12.6
12-13	0.23	15.0	0.00	12.0	0.00	15.0	0.00	12.0
13-14	0.11	13.6	0.00	9.2	0.13	14.9	0.19	10.4
14-15	0.14	11.0	0.00	7.4	0.09	11.5	0.00	7.4
15-16	0.19	7.8	0.00	5.5	0.11	9.0	0.16	6.1
16-17	1.05	5.7	0.00	5.0	0.29	7.0	0.00	5.0
17-18	0.25	4.1	0.20	5.0	0.20	5.0	0.00	5.0
18-19	0.00	1.9	0.00	3.0	0.75	4.0	0.37	5.4
19-20	0.00	1.0	0.00	1.7	0.00	1.0	0.85	2.4
20-21	0.00	1.0	0.00	1.0	0.00	1.6	0.00	1.0
21-22	0.00	0.4	0.00	1.0	1.00	0.4	0.00	1.0
22-23	0.00	0.0	0.00	0.5	0.00	0.0	1.00	1.0
23-24	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0
24-25	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0

T = 9.532 T = 7.612 30 day mortality: 50%
Ro = 0.983 Ro = 1.177 (49 deaths out of 98 arriving
lambda=1.00 lambda=1.02 within 30 days of birth date)
r = -0.002 r = 0.021

99 birth events to known age parents tabulated for Mx...

94 death events of known age tabulated for Qx...

WARNING: Values with small sample sizes (N) warrant less confidence...

Table 5. South China Tiger Breeding and Mortality 1985-1995 at Guangzhou, Shanghai, & Suzhou Zoos.

Reproduction	All Zoos	Guangzhou	Shanghai	Suzhou
Litters	44	14	17	9
Cubs	100 (45♂,30♀)	29 (?)	33 (20♂, 13♀)	31 (19♂, 12♀)
Birth M/F Ratio	1.50	?	1.54	1.58
Mean Litter Size	2.27	2.07	1.94	3.44
Surviving	32 (20♂, 12♀)	3 (1♂, 2♀)	10 (6♂, 4♀)	14 (10♂, 4♀)
Survival %	32%	10.3%	30.3%	45.2%
Mortality % <31 d	50%	86%	42.4%	35%
Number	50	25	14	11
Breeding Pairs	14	3	7	1
Studbook #		(119 x 120)		(157 x 147)
Mean Inbreeding Coefficient				
Survivors				0.375
Dead				0.375

Table 6

SOUTH CHINA TIGER Studbook
PANTHERA TIGRIS AMOYENSIS

GENE DROP and FOUNDER Analysis

3 May 1995 (Dataset of 28 April 1995)

6 Founders 49 Living descendants 69 In analysis

FOUNDER ALLELE REPRESENTATION

Founder	Retention	%Representation	Target	Difference
3 M	0.960	32.020	24.726	-7.294
6 M	0.640	9.072	16.493	7.420
7 F	0.528	6.817	13.606	6.789
8 F	0.499	17.496	12.872	-4.624
12 F	0.257	2.478	6.610	4.132
26 F	0.997	32.116	25.693	-6.424

GENETIC SUMMARY	Living Descendant Population	Potential
Number of founders:	6	6
Mean retention:	0.647	0.647
Founder genomes surviving:	3.880	3.880
Founder Genome Equivalents:	2.320	3.880
Fraction of wild gene diversity retained:	0.785	0.871
Fraction of wild gene diversity lost:	0.215	0.129
Mean inbreeding coefficient:	0.240	

Founders	3	6	7	8	12	26
Founder contributions	15.9375	4.5000	3.3750	8.5000	1.1250	15.5625
Fractional contributions	0.3253	0.0918	0.0689	0.1735	0.0230	0.3176
Number of living descendants	42	11	11	38	11	42

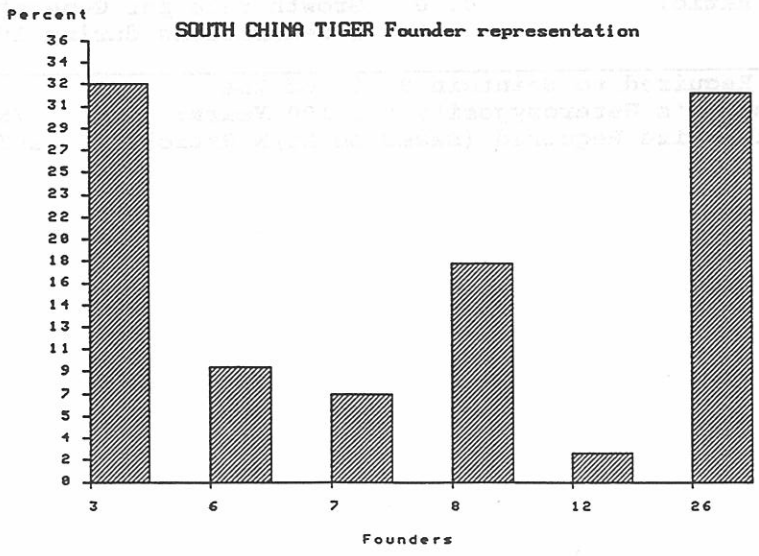


Table 7. Effective Size and Population Size Necessary for Maintaining 90% of Genetic Diversity in the Living Population for 100 Years.

No. of Years per Generation (T):	7.0	PROGRAM GOALS:	
Annual Growth Rate (lambda):	1.100	Length of Program (Years):	100
% Diversity Retained to Date:	80.0	% Hetero. To Retain:	90.0
Effective Size of Population:	30.0		
Estimated Ne/N Ratio:	0.70	Growth rate per Generation:	1.95
Current Year:	0	# Generations during 100 Years:	14

Effective Size Required to Maintain 90.0% of the Original Founder's Heterozygosity for 100 Years:	Not Possible With
Actual Population Size Required (Based on Ne/N Ratio):	These Parameters

Table 8. Effective Size and Population Size Necessary for Maintaining the Specified Amount of Genetic Diversity for 100 Years.

No. of Years per Generation (T):	7.0	PROGRAM GOALS:	
Annual Growth Rate (lambda):	1.050	Length of Program (Years):	100
% Diversity Retained to Date:	100.0	% Hetero. To Retain:	90.0
Effective Size of Population:	30.0		
Estimated Ne/N Ratio:	0.70	Growth rate per Generation:	1.41
Current Year:	0	# Generations during 100 Years:	14

Effective Size Required to Maintain 90.0% of the Original Founder's Heterozygosity for 100 Years:	81
Actual Population Size Required (Based on Ne/N Ratio):	116

Table 9. Effective Size and Population Size Necessary for Maintaining 90% of Genetic Diversity for 100 Years.

No. of Years per Generation (T):	7.0	PROGRAM GOALS:	
Annual Growth Rate (lambda):	1.100	Length of Program (Years):	100
% Diversity Retained to Date:	100.0	% Hetero. To Retain:	90.0
Effective Size of Population:	30.0		
Estimated Ne/N Ratio:	0.70	Growth rate per Generation:	1.95
Current Year:	0	# Generations during 100 Years:	14

Effective Size Required to Maintain 90.0% of the Original Founder's Heterozygosity for 100 Years:	75
Actual Population Size Required (Based on Ne/N Ratio):	107

Table 10. Effective Size and Population Size Necessary for Maintaining 90% of Genetic Diversity for 100 Years.

No. of Years per Generation (T):	8.0	PROGRAM GOALS:	
Annual Growth Rate (lambda):	1.100	Length of Program (Years):	100
% Diversity Retained to Date:	100.0	% Hetero. To Retain:	90.0
Effective Size of Population:	25.0		
Estimated Ne/N Ratio:	0.50	Growth rate per Generation:	2.14
Current Year:	0	# Generations during 100 Years:	12

Effective Size Required to Maintain 90.0% of the Original Founder's Heterozygosity for 100 Years:	66
Actual Population Size Required (Based on Ne/N Ratio):	132

Table 11. Effective Size and Population Size Necessary for Maintaining 90% of Genetic Diversity for 100 Years.

No. of Years per Generation (T):	7.0	PROGRAM GOALS:	
Annual Growth Rate (lambda):	1.100	Length of Program (Years):	100
% Diversity Retained to Date:	100.0	% Hetero. To Retain:	90.0
Effective Size of Population:	20.0		
Estimated Ne/N Ratio:	0.70	Growth rate per Generation:	1.95
Current Year:	0	# Generations during 100 Years:	14

Effective Size Required to Maintain 90.0% of the Original Founder's Heterozygosity for 100 Years:	91
Actual Population Size Required (Based on Ne/N Ratio):	130

Table 12. Effective Size and Population Size Necessary for Maintaining 90% of Genetic Diversity for 100 Years.

No. of Years per Generation (T):	7.0	PROGRAM GOALS:	
Annual Growth Rate (lambda):	1.100	Length of Program (Years):	100
% Diversity Retained to Date:	100.0	% Hetero. To Retain:	90.0
Effective Size of Population:	25.0		
Estimated Ne/N Ratio:	0.70	Growth rate per Generation:	1.95
Current Year:	0	# Generations during 100 Years:	14

Effective Size Required to Maintain 90.0% of the Original Founder's Heterozygosity for 100 Years:	80
Actual Population Size Required (Based on Ne/N Ratio):	114

Table 13. Effective Size and Population Size Necessary for Maintaining 90% of Genetic Diversity for 100 Years.

No. of Years per Generation (T):	7.0	PROGRAM GOALS:	
Annual Growth Rate (lambda):	1.100	Length of Program (Years):	100
% Diversity Retained to Date:	100.0	% Hetero. To Retain:	90.0
Effective Size of Population:	25.0		
Estimated Ne/N Ratio:	0.60	Growth rate per Generation:	1.95
Current Year:	0	# Generations during 100 Years:	14

Effective Size Required to Maintain 90.0% of the Original Founder's Heterozygosity for 100 Years:	80
Actual Population Size Required (Based on Ne/N Ratio):	133

Table 14. Effective Size and Population Size Necessary for Maintaining 90% of Genetic Diversity for 100 Years.

No. of Years per Generation (T):	7.0	PROGRAM GOALS:	
Annual Growth Rate (lambda):	1.200	Length of Program (Years):	100
% Diversity Retained to Date:	100.0	% Hetero. To Retain:	90.0
Effective Size of Population:	25.0		
Estimated Ne/N Ratio:	0.60	Growth rate per Generation:	3.58
Current Year:	0	# Generations during 100 Years:	14

Effective Size Required to Maintain 90.0% of the Original Founder's Heterozygosity for 100 Years:	77
Actual Population Size Required (Based on Ne/N Ratio):	128

Table 15. Effective Size and Population Size Necessary for Maintaining 90% of Genetic Diversity for 100 Years.

No. of Years per Generation (T):	8.0	PROGRAM GOALS:	
Annual Growth Rate (lambda):	1.100	Length of Program (Years):	100
% Diversity Retained to Date:	100.0	% Hetero. To Retain:	90.0
Effective Size of Population:	25.0		
Estimated Ne/N Ratio:	0.60	Growth rate per Generation:	2.14
Current Year:	0	# Generations during 100 Years:	12

Effective Size Required to Maintain 90.0% of the Original Founder's Heterozygosity for 100 Years:	66
Actual Population Size Required (Based on Ne/N Ratio):	110

South China Tiger Ex-Situ Conservation Outline

Chinese Association of Zoological Gardens

Introduction

According to some statistics, more than 110 species of mammals have vanished from the earth in the past two years. One third of them became extinct within this century. Experts from some international natural conservation organizations estimate that more than 600 species of wildlife are now at high risk. If no effective measures are taken, it is likely that some of these endangered species will disappear from the earth by the end of this century.

China is abundant in wildlife resources. Since the founding of P.R. China, governments at all levels have attached great importance to environmental and wildlife conservation. As early as 1962, the State Council gave an instruction of "Vigorous Conservation and Rational Utilization of Wildlife Resources" which addressed 18 species of wildlife, such as the giant panda, as national protected animals. In 1989, China's Wildlife Conservation Law was promulgated by the National People's Congress and the above 18 species of wildlife were rated as No. 1 protected animals. Consequently, the number of No. 1 protected animals was increased to 96. Over a long time, political, economic and social influences have worsened the living conditions for wildlife. Analyzing the entire situation across the country, wildlife resources have been declining; in particular, some wild animals of economic value and endemic species have become rare and endangered, which has brought attention to governments at all levels and authorities concerned.

With the development of the national economy and improvement of people's living conditions, conservation of wildlife has become of paramount importance. As the saying goes, "It is not too late to mend the fold even after some of the sheep have been lost." Therefore, we should take scientific and powerful measures to prevent the extinction of wildlife.

Status of the Tiger

The tiger is an endangered and naturally evolved endemic species. It is a precious heritage to mankind. According to some records, the tiger is widely distributed from north Siberia to south Sumatra. Since very ancient times, the tiger has had a close relationship with people. Armies, places and people have been named after the tiger, and even some countries like India, Malaysia and Singapore use the image of the tiger as their national emblems. In India, although their conservation work was well done and the tiger population numbers about 4,000, accounting for 60% of the world's total total population, still hundreds of tigers are killed every year.

International environmental organizations have made many efforts to conserve this species, such as holding an international symposium in 1986 and developing a global conservation plan for tigers at a 1992 meeting in Scotland. However, no remarkable achievement was made. In Southeast Asia and Russia, Northeast China and Korea, tens of thousands of tigers existed several hundred years ago, but now fewer than 2,000 persist.

There are eight subspecies of tiger: Bali tiger, Javan tiger, Caspian tiger, Siberian tiger, South China tiger, Sumatran tiger, South Asian (Indochinese) tiger, and Indian (Bengal) tiger. In modern times, the first three subspecies became extinct, and the Siberian, South China and Sumatran tigers became endangered. Although the Indian and South Asian tiger populations are in relatively good condition, they still need attention to be protected.

There have been three subspecies of tigers historically distributed in different areas of China: the Siberian tiger, South China tiger and South Asian tiger. The Siberian tiger was found in large primitive forest areas of Heilongjiang and Jilin provinces. In the 1960s, it was speculated that there were about 200 tigers persisting in Northeastern China. In the 1970s, a complete survey verified that only about 150 survived.

At one time a large population of South China tigers was distributed in the mountainous areas of south Qinling. For example, as many as 170 South China tigers were killed in Hunan between 1952 and 1953. In Jiangxi province, 171 tigers were killed between 1955 and 1956. In 1980, an investigation in Guangdong province showed only six tigers survived. In 1990, a survey jointly conducted by the Ministry of Forestry and WWF within the four provinces of Hunan, Jiangxi, Guangdong and Fujian verified that fewer than 20 South China tigers persisted in Guangdong and Fujian provinces. No records are kept for the distribution and population status of South Asian tigers in China.

Through these surveys we can see that currently three subspecies of tigers are at high risk, and if no prompt actions are taken, these subspecies are likely to become extinct some time in the near future. That will be a great loss to mankind. Due to the damage and shrinkage of habitats and the critical decline and extinction of tiger populations, the entire bio-ecosystem has become unbalanced. The natural habitat suitable for tigers is the standard bio-ecosystem needed by many wildlife species. Natural habitat cannot be created at will. In order to conserve habitat, people should rationally use natural resources to benefit themselves. Some scholars call the tiger "the king of animals" because the tiger is a large carnivore serving as an advanced consumer in the food chain as a whole. Thus, the tiger occupies a high position in the field of wildlife resources in a region or a country. If the bio-ecosystem in the tiger's range is not healthy, tiger populations will be unable to maintain their normal existence and reproduction. Also, human disturbance and killing of tigers exacerbate population decline and loss of habitat. Meanwhile, a stable and productive bio-ecosystem also plays an important role in man's production and living. Therefore, some scholars suggest that the number of tiger populations in the wild should be the criterion for mankind to judge the extent of human disturbance to the natural environment.

Distribution and Status of the South China Tiger

Historically, the South China tiger was widely distributed with large populations in almost all southern China provinces. There are even records of the capture of tigers found in cities of Nanjing, Fuzhou, Hongzhou and Ningbo of Jiangsu. Many records were also kept in some Chinese historical documents, e.g. *Chan Ling County Annals* (1733), *Qian Long Emperor* (1770), and *Shanghang Annals* (1938). In the 1950s, the South China tiger was found in Hubei, Anhui, Jiangxi, Xishuangbanna of Yunnan, Fujian, Hunan, Henan and Wan County of Sechuan as well as in the mountainous areas of DabaShan. At that time, the news media reported that the tiger was "a harmful animal," leading to an upsurge of tiger killings in southern part of China. It was promoted that tiger bone could treat diseases. Thus, 334 tigers were killed within the decade between 1955 and 1964, which resulted in a sharp decrease of the South China tiger population. In the mid 1970s, the tiger became a rare species. In in 1990s, in spite of governmental attention and increased public awareness, the tiger became endangered and was brought to the brink of extinction.

South China Tiger Captive Breeding Status

Captive breeding of South China tigers has only been conducted in a few Chinese Zoos.

a. Captive Breeding.

According to incomplete statistics done in May 1990, captive breeding programs have been conducted at the following zoos: Shanghai Zoo, Chongqing Zoo, Guiyang Zoo, Guangzhou Zoo, Nanchang Zoo, Tianjin Zoo, Shijianzhuang Zoo, Hefei Zoo, Fuzhou Zoo, Hangzhou Zoo, Qiqihar Zoo, Suzhou Zoo, Liuzhou Zoo, Luoyang Zoo, Liupanshui Zoo, Xia Meng Zoo and Baoding Zoo. Shanghai, Chongqing, Guiyang and Guangzhou zoos have a longer history of breeding. Surviving births total 30.

b. Reproduction.

Statistics done in May 1990 indicated the following information:

Shanghai Zoo:	9 litters, 20 cubs, 8 survived
Chongqing Zoo:	9 litters, 24 cubs
Nanchang Zoo:	10 cubs

The current studbook information indicates that South China tigers are now captively bred in the following Chinese zoos:

Chongqing Zoo, Zhongshan Zoo in Xiamen City, Jiufengshan Zoo, Longsha Park in Qiqihar City, Zhenshou Zoo, Shijiazhang Zoo, Baoding Zoo, Shanghai Zoo, Suzhou Zoo, Nantong Zoo, Changchun Zoo, Nanning Zoo, Guangzhou Zoo, Qianling Zoo and Tianjing Zoo. The total number of tigers is 47 (28 male, 19 female). Captive breeding was well done in Shanghai and Suzhou Zoos. In particular, Suzhou Zoo has made remarkable achievements in captive breeding, which caused international attention on the South China tiger as a result of news released home and abroad. The Chinese people have a heavy burden on their shoulders in rescuing this subspecies of tiger, i.e. Chinese zoos should step up efforts to conduct successful captive breeding

programs and increase the species survival rate, in hope of eventually releasing the subspecies into the wild so that the population will gradually be able to be augmented.

China's South China Tiger Ex-situ Conservation Outline

Conservation of the South China tiger is a priority program as a part of China's Bio-Diversity Conservation Action Plan.

a. Establishment of a studbook for South China tigers now in captivity on the basis of surveys and statistics.
South China tigers in Chinese zoos are the basis for their future population augmentation. First of all, the studbook should be well established following internationally standardized requirements. Each zoo should have its own record keeper. In negotiation with the IUCN/SSC Conservation Breeding Specialist Group (CBSG) at the South China Tiger Ex-Situ Conservation Masterplan Workshop held in Suzhou in April 1995, the South China tiger studbook was decided to be recorded in the SPARKS software. Li Yinghong of Chongqing Zoo was designated to be responsible for studbook recording which would serve as the international standardized studbook. The studbook will be revised once a year. Original materials will be kept on file by the China Zoological Society.

b. Scientific studbook analysis and minimizing possibility of gene pollution and inbreeding.
While analyzing tiger records, any individual who is proved to be a hybrid with unknown geneology will not be used for further breeding. Breeding should be conducted by selecting excellent mates based upon studbook analysis.

c. Working out a five-year captive breeding plan.
The zoos in China will cooperate in captive breeding and develop a five-year plan (1996-2000) with effective measures to ensure the reproductive success. In late September 1995 we will discuss this with foreign specialist groups and work out all details for this plan.

d. Setting up a coordination committee for breeding of South China tigers.
In order to successfully breed South China tigers, it was recommended at the Suzhou workshop to establish a coordination committee among Chinese zoos aimed at organizing zoos' meeting and setting tasks and goals for each zoo to accomplish as well as summarizing the implementation of the breeding plan designed to improve the breeding of this subspecies. Shanghai, Suzhou and Chongqing Zoos will be key members of this committee. All other institutions possessing South China tigers are required to join.

e. Strengthening construction and management of zoos possessing South China tigers.
It is known to all that the conservation of South China tigers is an arduous task for zoos to accomplish. It requires guarantees in manpower, material and financial resources as well as advanced technologies. Setting up breeding bases has been proved globally to be an effective method for the ex-situ conservation of rare and endangered species in terms of breeding,

treatment of disease, technical training, scientific research, etc. By setting up bases, the ex-situ conservation and rescue measures for a certain species can be systematized, which is very conducive to the accumulation of scientific information and development of international cooperation and exchange. However, the South China tiger seems quite different in this respect. Therefore, it was recommended at the Suzhou workshop that it is not appropriate to set up breeding bases for South China tiger conservation. More and better facilities are rather needed by four key members of the Breeding Coordination Committee to strengthen their construction and management.

f. International cooperation.
The South China tiger is an endangered species exclusively found in China. Governments at all levels and other authorities concerned have made considerable efforts to conserve the subspecies. However, China is a developing country with limited financial resources and will hopefully be able to gain international support and assistance. The IUCN/SSC Conservation Breeding Specialist Group has rendered great support to the Chinese South China tiger conservation. We expect to further cooperate with IUCN/SSC CBSG.

g. Promoting the importance of ex-situ conservation of the South China tiger.
From now on, we will make good use of all materials we have and cooperate with news media to promote the importance of conserving this subspecies in a bid to increase governmental concerns and public awareness of the animal's plight. Details will be discussed at the first session of the Breeding Coordination Committee to be held in late November 1995.

h. Future prospects.
China's South China Tiger Ex-situ Conservation Masterplan Workshop held in Suzhou in April 1995 demonstrated that China has attached great importance on world endangered species conservation. South China tiger ex-situ conservation is an important action to be taken by the China Zoological Society and also by some Chinese zoos.

If everything goes well, this subspecies captive population will likely be increased to 70-80 tigers by the end of this century. This will create favorable conditions for their future release to the wild. Therefore, we should step up efforts to expedite the rehabilitation of wild populations and habitat. In such a case, the extinction of South China tiger may be prevented.

SOUTH CHINA TIGER Studbook
(Panthera tigris amoyensis)

#	Sex	Birth Date	Sire	Dam	Location	Date	Local ID	Event	Name
1	F	~ 1955	WILD	WILD	SICHUAN	~ 1955	UNK	Capture	MENG ZI
					HOPEI	~ 1955	UNK	Transfer	
					SHANGHAI	~ 1955	UNK	Transfer	
					HEFEI	~ 1970		Death	
2	M	~ 1955	WILD	WILD	QINGZHEN	~ 1959	UNK	Capture	DA HUA
					ZUNYI	~ 1959	UNK	Transfer	
					PEKING	~ 1959	UNK	Transfer	
						4 Mar 1975		Death	
3	M	~ 1956	WILD	WILD	KUEIYANG	~ 1959	UNK	Capture	XIAO MAO
					PEKING	~ 1959	UNK	Transfer	
					SHANGHAI	~ 1959	UNK	Transfer	
						~ 1976		Death	
4	F	~ Mar 1956	WILD	WILD	WUHAN C	~ Sep 1956	UNK	Capture	
					SHIH CHIA	~ Sep 1956	UNK	Transfer	
					CANTON CH	16 May 1966	UNK	Transfer	
						~ 1967		Death	
5	F	~ 1957	WILD	WILD	GUIZHOU	~ 1959	UNK	Capture	
					KUEIYANG	~ 1959	UNK	Transfer	
					PEKING	~ 1959	UNK	Transfer	
						~ 1959		Death	
6	M	~ 1958	WILD	WILD	QINGZHEN	~ 1958	UNK	Capture	QINGZHENHU
					KUEIYANG	~ 1958	UNK	Transfer	
						~ 1968		Death	
7	F	~ 1958	WILD	WILD	CHANGSHUN	~ 1958	UNK	Capture	CHANGSHUNH
					KUEIYANG	~ 1958	UNK	Transfer	
					CHENGCHOW	~ 1974	UNK	Transfer	
						~ 1980		Death	
8	F	~ 1958	WILD	WILD	ZUNYI	~ 1962	UNK	Capture	XIAO YI
					SHANGHAI	~ 1962	UNK	Transfer	
						~ 1970		Death	
9	F	~ 1958	WILD	WILD	GUIZHOU	~ 1959	UNK	Capture	
					KUEIYANG	~ 1959	UNK	Transfer	
					PEKING	~ 1959	UNK	Transfer	
						~ 1959		Death	
10	M	~ 1958	WILD	WILD	GUANGDONG	~ 1959	UNK	Capture	DA XING
					CANTON CH	~ 1959	UNK	Transfer	
					PEKING	~ 1960	UNK	Transfer	
						~ 1960		Death	

SOUTH CHINA TIGER Studbook
(Panthera tigris amoyensis)

Stud #	Sex	Birth Date	Sire	Dam	Location	Date	Local ID	Event	Name
11	F	~ 1958	WILD	WILD	GUANGDONG	~ 1959	UNK	Capture	XIAO MEI
					CANTON CH	~ 1959	UNK	Transfer	
					PEKING	~ 1960	UNK	Transfer	
						~ 1960		Death	
12	F	~ 1959	WILD	WILD	BIJIE	~ 1959	UNK	Capture	BIJIEHU
					KUEIYANG	~ 1959	UNK	Transfer	
						~ 1967		Death	
13	M	~ 1959	WILD	WILD	GUIZHOU	~ 1962	UNK	Capture	XIAO ZUN
					KUEIYANG	~ 1962	UNK	Transfer	
					SHANGHAI	~ 1962	UNK	Transfer	
						~ 1964		Death	
14	M	~ 1959	WILD	WILD	GUANGSHUN	~ 1959	UNK	Capture	GUANGSHUNH
					KUEIYANG	~ 1959	UNK	Transfer	
						~ 1964		Death	
15	F	~ 1959	WILD	WILD	KUEIYANG	~ 1959	UNK	Capture	
					NINGBO	~ 1974	UNK	Transfer	
						~ 1979		Death	
16	F	~ 1960	WILD	WILD	CANTON CH	~ 1960	UNK	Capture	DA EN
						~ 1966		Death	
17	F	~ 1963	6	12	KUEIYANG	~ 1963	UNK	Birth	WEIBINGHU
					CHONGQING	~ 1982	UNK	Transfer	
						~ 1982		Death	
18	M	~ 1963	6	7	KUEIYANG	~ 1963	UNK	Birth	
					ZUNYI	~ 1964	UNK	Transfer	
						1 Jan 1964		Death	
19	F	~ 1963	6	7	KUEIYANG	~ 1963	UNK	Birth	
					ZUNYI	~ 1979	UNK	Transfer	
						1 Jan 1979		Death	
20	M	~ 1964	6	7	KUEIYANG	~ 1964	UNK	Birth	DAGONGHU
						~ 1979		Death	
21	M	~ 1964	6	12	KUEIYANG	~ 1964	UNK	Birth	
					PEKING	~ 1967	UNK	Transfer	
						????		Death	
22	F	~ 1964	6	12	KUEIYANG	~ 1964	UNK	Birth	
					PEKING	~ 1967	UNK	Transfer	
						~ 1967		Death	
23	F	~ 1965	6	7	KUEIYANG	~ 1965	UNK	Birth	ER HUA

d #	Sex	Birth Date	Sire	Dam	Location	Date	Local ID	Event	Name
						~ 1980		Death	
24	F	~ 1965	6	7	KUEIYANG	~ 1965	UNK	Birth	
					PEKING	~ 1971	UNK	Transfer	
						~ 1971		Death	
25	F	~ 1966	WILD	WILD	HUNAN	~ 1966	UNK	Capture	LI SHA (NA
					CHANGSHA	~ 1966	UNK	Transfer	
					CHUNGKING	~ 1 Dec 1980	UNK	Transfer	
					LUOYANG	27 Nov 1982	UNK	Transfer	
						9 Jul 1988		Death	
26	F	~ 1967	WILD	WILD	FUCHOW	~ 1970	UNK	Capture	XIAO FU
					SHANGHAI	~ 1970	UNK	Transfer	
					HENAN	~ 1983	UNK	Transfer	
						????		Death	
27	M	2 Aug 1968	3	8	SHANGHAI	2 Aug 1968	UNK	Birth	YI YI
						1 Sep 1985		Death	
28	M	2 Aug 1968	3	8	SHANGHAI	2 Aug 1968	UNK	Birth	
					UNKNOWN	~ 1969	UNK	Transfer	
						????		Death	
29	F	13 May 1971	3	26	SHANGHAI	13 May 1971	UNK	Birth	71513
						22 Apr 1982		Death	
30	M	~ 1972	20	23	KUEIYANG	~ 1972	UNK	Birth	AH GUI
					PEKING	~ 1973	UNK	Transfer	
					WUHAN	31 Mar 1982	UNK	Transfer	
						~ 1 Aug 1990		Death	
31	M	~ 1972	20	23	KUEIYANG	~ 1972	UNK	Birth	
					LUOYANG	~ 1973	UNK	Transfer	
						~ 1 Jul 1980		Death	
32	F	~ 1972	20	23	KUEIYANG	~ 1972	UNK	Birth	
					LUOYANG	~ 1973	UNK	Transfer	
						~ 1 Jul 1980		Death	
33	M	~ 1972	20	23	KUEIYANG	~ 1972	UNK	Birth	
					DALIAN	~ 1977	UNK	Transfer	
					PEKING	3 Apr 1980	UNK	Transfer	
						~ 1980		Death	
34	M	18 Oct 1972	3	26	SHANGHAI	18 Oct 1972	UNK	Birth	
						20 Oct 1972		Death	
35	M	14 Apr 1973	3	26	SHANGHAI	14 Apr 1973	UNK	Birth	

SOUTH CHINA TIGER Studbook
(Panthera tigris amoyensis)

Stud #	Sex	Birth Date	Sire	Dam	Location	Date	Local ID	Event	Name
					URUMQI	~ Jan 1974	UNK	Transfer	
						~ 1975		Death	
36	M	14 Apr 1973	3	26	SHANGHAI	14 Apr 1973	UNK	Birth	
						15 Apr 1973		Death	
37	M	~ Jul 1973	20	17	KUEIYANG	~ Jul 1973	UNK	Birth	
					ZUNYI	~ Oct 1973	UNK	Transfer	
					KUEIYANG	~ 1980	UNK	Transfer	
						????		Death	
38	M	~ 1 Jul 1973	20	17	KUEIYANG	~ 1 Jul 1973	UNK	Birth	WEI WEI
					CHUNGKING	6 Oct 1973	UNK	Transfer	
						9 Jul 1991		Death	
39	M	21 Aug 1973	20	23	KUEIYANG	21 Aug 1973	UNK	Birth	QINGNIANGO
					ZUNYI	6 Aug 1988	UNK	Transfer	
						~ 1994		Death	
40	F	21 Aug 1973	20	23	KUEIYANG	21 Aug 1973	UNK	Birth	QINGNIANMU
						~ 1992		Death	
41	M	21 Aug 1973	20	23	KUEIYANG	21 Aug 1973	UNK	Birth	
					SUCHOU	~ 1974	UNK	Transfer	
						????		Death	
42	M	14 Dec 1973	27	26	SHANGHAI	14 Dec 1973	UNK	Birth	
						14 Dec 1973		Death	
43	M	14 Dec 1973	27	26	SHANGHAI	14 Dec 1973	UNK	Birth	
						14 Dec 1973		Death	
44	F	14 Dec 1973	27	26	SHANGHAI	14 Dec 1973	UNK	Birth	
						14 Dec 1973		Death	
45	M	~ Jan 1974	20	17	KUEIYANG	~ Jan 1974	UNK	Birth	
					PEKING	~ 1975	UNK	Transfer	
						~ 1975		Death	
46	M	15 May 1974	3	26	SHANGHAI	15 May 1974	UNK	Birth	
						15 May 1974		Death	
47	M	15 May 1974	3	26	SHANGHAI	15 May 1974	UNK	Birth	
						15 May 1974		Death	
48	F	15 May 1974	3	26	SHANGHAI	15 May 1974	UNK	Birth	
						15 May 1974		Death	
49	F	15 May 1974	3	26	SHANGHAI	15 May 1974	UNK	Birth	

#	Sex	Birth Date	Sire	Dam	Location	Date	Local ID	Event	Name
						15 May 1974		Death	
50	F	15 May 1974	3	26	SHANGHAI	15 May 1974	UNK	Birth	
						15 May 1974		Death	
51	F	~ 1 Jun 1974	20	23	KUEIYANG	~ 1 Jun 1974	UNK	Birth	TING TING
					CHUNGKING	28 Dec 1975	UNK	Transfer	
						22 Sep 1993		Death	
52	M	~ 1974	20	23	KUEIYANG	~ 1 Jun 1974	UNK	Birth	
					SUCHOU	~ Oct 1974	UNK	Transfer	
						????		Death	
53	M	~ 1 Jun 1974	20	23	KUEIYANG	~ 1 Jun 1974	UNK	Birth	
					ANSHAN	~ 1975	UNK	Transfer	
						1 Jan 1975		Death	
54	F	~ 1 Jun 1974	20	23	KUEIYANG	~ 1 Jun 1974	UNK	Birth	
					ANSHAN	~ 1975	UNK	Transfer	
						~ 1975		Death	
55	M	26 Jun 1974	27	29	SHANGHAI	26 Jun 1974	UNK	Birth	
						26 Jun 1974		Death	
56	F	26 Jun 1974	27	29	SHANGHAI	26 Jun 1974	UNK	Birth	
						26 Jun 1974		Death	
57	M	~ 1975	20	23	KUEIYANG	~ 1975	UNK	Birth	
					HARBIN	~ 1975	UNK	Transfer	
					CHICHIHAL	6 Jun 1977	UNK	Transfer	
					CHUNGKING	~ Oct 1990	UNK	Transfer	
						19 Jun 1991		Death	
58	M	~ 1975	20	23	KUEIYANG	~ 1975	UNK	Birth	
					BENXI	~ 1975	UNK	Transfer	
						~ Jan 1990		Death	
59	M	~ 1975	20	23	KUEIYANG	~ 1975	UNK	Birth	
					JIAMUSI	~ 1975	UNK	Transfer	
						~ 1980		Death	
60	M	~ 1975	20	17	KUEIYANG	~ 1975	UNK	Birth	
					ZUNYI	~ 1975	UNK	Transfer	
						1 Jan 1975		Death	
61	F	~ 1975	20	17	KUEIYANG	~ 1975	UNK	Birth	
					ZUNYI	~ 1975	UNK	Transfer	
						1 Jan 1975		Death	

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Stud #	Sex	Birth Date	Sire	Dam	Location	Date	Local ID	Event	Name
62	M	~ 1975	20	23	KUEIYANG	~ 1975	UNK	Birth	
					PEKING	13 May 1977	UNK	Transfer	
					BENGFU	4 Oct 1977	UNK	Transfer	
						1 Sep 1986		Death	
63	F	23 May 1975	27	29	SHANGHAI	23 May 1975	UNK	Birth	
					BAOTOU	1 Oct 1975	UNK	Transfer	
						????		Death	
64	F	23 May 1975	27	29	SHANGHAI	23 May 1975	UNK	Birth	
					FUCHOW	1 Sep 1975	UNK	Transfer	
						~ 1 Jul 1993		Death	
65	M	30 May 1975	3	26	SHANGHAI	30 May 1975	UNK	Birth	XIAO HU
					CANTON CH	~ 1 Apr 1976	UNK	Transfer	
						17 Dec 1988		Death	
66	M	30 May 1975	3	26	SHANGHAI	30 May 1975	UNK	Birth	
					CHANGSHA	~ 1 Nov 1975	UNK	Transfer	
						~ 1976		Death	
67	M	30 May 1975	3	26	SHANGHAI	30 May 1975	UNK	Birth	
					UNKNOWN	~ 1976	UNK	Transfer	
						????		Death	
68	M	30 May 1975	3	26	SHANGHAI	30 May 1975	UNK	Birth	
					UNKNOWN	~ 1976	UNK	Transfer	
						????		Death	
69	M	20 May 1976	3	26	SHANGHAI	20 May 1976	UNK	Birth	HE PING
						1 Sep 1992		Death	
70	M	20 May 1976	27	26	SHANGHAI	20 May 1976	UNK	Birth	
						20 May 1976		Death	
71	F	20 May 1976	27	26	SHANGHAI	20 May 1976	UNK	Birth	
						~ 1989		Death	
72	M	20 May 1976	27	26	SHANGHAI	20 May 1976	UNK	Birth	
						20 Nov 1976		Death	
73	F	20 May 1976	27	26	SHANGHAI	20 May 1976	UNK	Birth	HUA HUA
					NANCHANG	3 Feb 1978	UNK	Transfer	
						1 Jul 1994		Death	
74	M	~ 1 Jul 1976	20	23	KUEIYANG	~ 1 Jul 1976	UNK	Birth	GUI LAI
					HANGCHOW	~ 1 Oct 1976	UNK	Transfer	
						~ 1 Oct 1994		Death	

ud #	Sex	Birth Date	Sire	Dam	Location	Date	Local ID	Event	Name
75	F	10 Jul 1976	27	29	SHANGHAI	10 Jul 1976	UNK	Birth	HU NU
					CANTON CH	31 Aug 1977	UNK	Transfer	
					NANNING	~ 1 Nov 1994	UNK	Transfer	
76	M	10 Jul 1976	27	29	SHANGHAI	10 Jul 1976	UNK	Birth	
					UNKNOWN	~ 1977	UNK	Transfer	
						????		Death	
77	F	28 Feb 1977	27	29	SHANGHAI	28 Feb 1977	UNK	Birth	
					PEKING	21 Sep 1977	UNK	Transfer	
					BAOTING	27 Apr 1978	UNK	Transfer	
						27 Aug 1978		Death	
78	M	28 Feb 1977	27	29	SHANGHAI	28 Feb 1977	UNK	Birth	
					UNKNOWN	~ 1978	UNK	Transfer	
						????		Death	
79	F	8 May 1977	27	26	SHANGHAI	8 May 1977	UNK	Birth	7758
						~ Oct 1984		Death	
80	M	8 May 1977	27	26	SHANGHAI	8 May 1977	UNK	Birth	
					LIUCHOW	25 Nov 1978	UNK	Transfer	
						????		Death	
81	F	8 May 1977	27	26	SHANGHAI	8 May 1977	UNK	Birth	
						23 Jul 1978		Death	
82	F	27 Sep 1977	27	29	SHANGHAI	27 Sep 1977	UNK	Birth	
						27 Sep 1977		Death	
83	M	27 Sep 1977	27	29	SHANGHAI	27 Sep 1977	UNK	Birth	
						27 Sep 1977		Death	
84	M	27 Sep 1977	27	29	SHANGHAI	27 Sep 1977	UNK	Birth	
						27 Sep 1977		Death	
85	F	27 Sep 1977	27	29	SHANGHAI	27 Sep 1977	UNK	Birth	
					HEFEI	~ 1980	UNK	Transfer	
						1 Jan 1980		Death	
86	M	29 Jan 1978	27	26	SHANGHAI	29 Jan 1978	UNK	Birth	
						29 Jan 1978		Death	
87	M	29 Jan 1978	27	26	SHANGHAI	29 Jan 1978	UNK	Birth	
						29 Jan 1978		Death	
88	F	29 Jan 1978	27	26	SHANGHAI	29 Jan 1978	UNK	Birth	
						29 Jan 1978		Death	

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Stud #	Sex	Birth Date	Sire	Dam	Location	Date	Local ID	Event	Name
89	M	27 Jun 1978	38	51	CHUNGKING	27 Jun 1978	UNK	Birth	
						27 Jun 1978		Death	
90	M	27 Jun 1978	38	51	CHUNGKING	27 Jun 1978	UNK	Birth	
						27 Jun 1978		Death	
91	F	27 Jun 1978	38	51	CHUNGKING	27 Jun 1978	UNK	Birth	
						27 Jun 1978		Death	
92	F	27 Jun 1978	38	51	CHUNGKING	27 Jun 1978	UNK	Birth	
						27 Jun 1978		Death	
93	M	12 Nov 1978	27	26	SHANGHAI	12 Nov 1978	UNK	Birth	
						12 Nov 1978		Death	
94	M	17 Dec 1978	38	51	CHUNGKING	17 Dec 1978	UNK	Birth	XIAO HUA
					NANNING	~ 1986	UNK	Transfer	
95	F	17 Dec 1978	38	51	CHUNGKING	17 Dec 1978	UNK	Birth	
						17 Dec 1978		Death	
96	M	25 Feb 1979	27	29	SHANGHAI	25 Feb 1979	UNK	Birth	
						25 Feb 1979		Death	
97	M	25 Feb 1979	27	29	SHANGHAI	25 Feb 1979	UNK	Birth	
						25 Feb 1979		Death	
98	M	25 Feb 1979	27	29	SHANGHAI	25 Feb 1979	UNK	Birth	
						25 Feb 1979		Death	
99	M	1 May 1979	65	75	CANTON CH	1 May 1979	UNK	Birth	
						2 May 1979		Death	
100	F	1 May 1979	65	75	CANTON CH	1 May 1979	UNK	Birth	
						2 May 1979		Death	
101	F	20 May 1979	27	26	SHANGHAI	20 May 1979	UNK	Birth	AH FU
						~ 1988		Death	
102	M	19 Aug 1979	27	29	SHANGHAI	19 Aug 1979	UNK	Birth	
						19 Aug 1979		Death	
103	M	10 Sep 1979	38	51	CHUNGKING	10 Sep 1979	UNK	Birth	DONG DONG
					KUEIYANG	1 Mar 1980	UNK	Transfer	
104	M	10 Sep 1979	38	51	CHUNGKING	10 Sep 1979	UNK	Birth	XIAO ZHU
					KUNMING	5 Mar 1980	UNK	Transfer	
					CANTON CH	~ Oct 1990	UNK	Transfer	
						~ Oct 1990		Death	

d #	Sex	Birth Date	Sire	Dam	Location	Date	Local ID	Event	Name
105	M	10 Sep 1979	38	51	CHUNGKING	10 Sep 1979	UNK	Birth	XIAO MING
					CHANGSHA	27 Feb 1980	UNK	Transfer	
						~ 1 Apr 1980		Death	
106	M	12 Sep 1979	39	23	KUEIYANG	12 Sep 1979	UNK	Birth	MIN MIN
					HEFEI	~ 1 May 1985	UNK	Transfer	
						1 May 1985		Death	
107	M	12 Sep 1979	39	23	KUEIYANG	12 Sep 1979	UNK	Birth	QIAN QIAN
					LIUPANSUI	10 May 1987	UNK	Transfer	
						????		Death	
108	F	13 Sep 1979	39	23	KUEIYANG	13 Sep 1979	UNK	Birth	XIAO NING
					CHUNGKING	29 Aug 1980	UNK	Transfer	
					NANCHANG	~ 1 May 1993	UNK	Transfer	
						~ Jan 1995		Death	
109	M	8 Apr 1980	27	26	SHANGHAI	8 Apr 1980	UNK	Birth	
						8 Apr 1980		Death	
110	M	8 Apr 1980	27	26	SHANGHAI	8 Apr 1980	UNK	Birth	
					XIAMEN	18 Oct 1980	UNK	Transfer	
111	F	8 Apr 1980	27	26	SHANGHAI	8 Apr 1980	UNK	Birth	AH YI
112	M	20 Jun 1980	27	29	SHANGHAI	20 Jun 1980	UNK	Birth	HE HAI
					NANCHANG	28 Oct 1980	UNK	Transfer	
						24 Jan 1995		Death	
113	F	20 Jun 1980	27	29	SHANGHAI	20 Jun 1980	UNK	Birth	XIAO HUA
					WUHAN	~ Jun 1981	UNK	Transfer	
						27 Aug 1982		Death	
114	M	24 Jun 1980	65	75	CANTON CH	24 Jun 1980	UNK	Birth	
						24 Jun 1980		Death	
115	F	24 Jun 1980	65	75	CANTON CH	24 Jun 1980	UNK	Birth	
						24 Jun 1980		Death	
116	M	8 Jul 1980	38	51	CHUNGKING	8 Jul 1980	UNK	Birth	GANG GANG
					CHONGQING	3 Nov 1980	UNK	Transfer	
						~ Nov 1990		Death	
117	M	8 Jul 1980	38	51	CHUNGKING	8 Jul 1980	UNK	Birth	QIANG QIAN
					CHANGSHA	5 Nov 1980	UNK	Transfer	
					TIANJIN	25 Oct 1981	UNK	Transfer	
						~ 1990		Death	

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Stud #	Sex	Birth Date	Sire	Dam	Location	Date	Local ID	Event	Name
118	F	8 Jul 1980	38	51	CHUNGKING	8 Jul 1980	UNK	Birth	FANG FANG
					ANHWEI	~ 1981	UNK	Transfer	
						????		Death	
119	M	30 Nov 1980	65	75	CANTON CH	30 Nov 1980	UNK	Birth	QI QI
120	F	30 Nov 1980	65	75	CANTON CH	30 Nov 1980	UNK	Birth	QU QU
121	M	6 Feb 1981	27	29	SHANGHAI	6 Feb 1981	UNK	Birth	
						8 Feb 1981		Death	
122	M	6 Feb 1981	27	29	SHANGHAI	6 Feb 1981	UNK	Birth	
						8 Feb 1981		Death	
123	F	6 Feb 1981	27	29	SHANGHAI	6 Feb 1981	UNK	Birth	
						8 Feb 1981		Death	
124	F	6 Feb 1981	27	29	SHANGHAI	6 Feb 1981	UNK	Birth	
					LUSHUN	2 Oct 1981	UNK	Transfer	
						????		Death	
125	M	27 May 1981	27	26	SHANGHAI	27 May 1981	UNK	Birth	
						27 May 1981		Death	
126	F	27 May 1981	27	26	SHANGHAI	27 May 1981	UNK	Birth	
						~ 1 Nov 1981		Death	
127	M	12 Jun 1981	38	51	CHUNGKING	12 Jun 1981	UNK	Birth	DA QI
					BAOTING	1 Dec 1981	UNK	Transfer	
					SHIH CHIA	16 Apr 1991	UNK	Transfer	
					BAOTING	~ 1 Jun 1992	UNK	Transfer	
128	M	12 Jun 1981	38	51	CHUNGKING	12 Jun 1981	UNK	Birth	DA YE
					SHANGHAI	1 Nov 1983	UNK	Transfer	
						1 Aug 1994		Death	
129	F	12 Jun 1981	38	51	CHUNGKING	12 Jun 1981	UNK	Birth	DA FEN
						15 Jan 1995		Death	
130	M	4 Feb 1982	65	75	CANTON CH	4 Feb 1982	UNK	Birth	
						6 Feb 1982		Death	
131	F	4 Feb 1982	65	75	CANTON CH	4 Feb 1982	UNK	Birth	
						6 Feb 1982		Death	
132	F	4 Feb 1982	65	75	CANTON CH	4 Feb 1982	UNK	Birth	
						6 Feb 1982		Death	
133	M	15 Apr 1982	27	29	SHANGHAI	15 Apr 1982	UNK	Birth	

ID #	Sex	Birth Date	Sire	Dam	Location	Date	Local ID	Event	Name
						15 Apr 1982		Death	
134	M	15 Apr 1982	27	29	SHANGHAI	15 Apr 1982	UNK	Birth	
						15 Apr 1982		Death	
135	F	15 Apr 1982	27	29	SHANGHAI	15 Apr 1982	UNK	Birth	
						15 Apr 1982		Death	
136	M	29 Apr 1982	27	79	SHANGHAI	29 Apr 1982	UNK	Birth	HAI XIAO
					CHUNGKING	16 Nov 1982	UNK	Transfer	
					NANCHONG	15 Jul 1994	UNK	Transfer	
137	F	29 Apr 1982	27	79	SHANGHAI	29 Apr 1982	UNK	Birth	HAI TING
					CHUNGKING	16 Nov 1982	UNK	Transfer	
						~ 1985		Death	
138	M	29 Apr 1982	27	111	SHANGHAI	29 Apr 1982	UNK	Birth	AH HAI
					WUHAN	~ 1 Jul 1985	UNK	Transfer	
						1 Sep 1988		Death	
139	M	29 Apr 1982	27	111	SHANGHAI	29 Apr 1982	UNK	Birth	
					UNKNOWN	~ 1983	UNK	Transfer	
						????		Death	
140	F	4 May 1982	38	51	CHUNGKING	4 May 1982	UNK	Birth	QING QING
					SHANGHAI	24 Nov 1982	UNK	Transfer	
141	F	4 May 1982	38	51	CHUNGKING	4 May 1982	UNK	Birth	MEI MEI
142	?	7 Jun 1982	65	75	CANTON CH	7 Jun 1982	UNK	Birth	
						7 Jun 1982		Death	
143	?	7 Jun 1982	65	75	CANTON CH	7 Jun 1982	UNK	Birth	
					WUHAN	~ 1 Dec 1982	UNK	Transfer	
						~ 1983		Death	
144	?	7 Jun 1982	65	75	CANTON CH	7 Jun 1982	UNK	Birth	
					WUHAN	~ 1 Jan 1983	UNK	Transfer	
						~ 1985		Death	
145	M	9 Dec 1982	112	73	NANCHANG	9 Dec 1982	UNK	Birth	AH CHANG
					SUCHOU	21 Sep 1983	UNK	Transfer	
						14 Nov 1983		Death	
146	F	9 Dec 1982	112	73	NANCHANG	9 Dec 1982	UNK	Birth	
					SUCHOU	21 Sep 1983	UNK	Transfer	
						????		Death	
147	F	20 Apr 1983	112	73	NANCHANG	20 Apr 1983	UNK	Birth	

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Stud #	Sex	Birth Date	Sire	Dam	Location	Date	Local ID	Event	Name
					SUCHOU	~ 1 Sep 1983	UNK	Transfer	
148	F	30 May 1983	27	111	SHANGHAI	30 May 1983	UNK	Birth	
					UNKNOWN	~ 1984	UNK	Transfer	
						????		Death	
149	F	10 Jun 1983	38	51	CHUNGKING	10 Jun 1983	UNK	Birth	CHANG YING
					UNKNOWN	1 Jan 1984	UNK	Transfer	
						????		Death	
150	F	29 Jun 1983	27	101	SHANGHAI	29 Jun 1983	UNK	Birth	
					BENGFU	7 Jul 1984	UNK	Transfer	
						1 Sep 1986		Death	
151	M	29 Jun 1983	27	101	SHANGHAI	29 Jun 1983	UNK	Birth	0049
					CHICHIHAL	21 Oct 1983	UNK	Transfer	
152	M	14 Nov 1983	65	75	CANTON CH	14 Nov 1983	UNK	Birth	
						15 Nov 1983		Death	
153	F	14 Nov 1983	65	75	CANTON CH	14 Nov 1983	UNK	Birth	
						15 Nov 1983		Death	
154	F	~ 1 Jan 1984	112	73	NANCHANG	~ 1 Jan 1984	UNK	Birth	XIAO CHANG
					WUHAN	4 Jul 1984	UNK	Transfer	
						1 Jan 1985		Death	
155	M	~ 1 Jan 1984	112	73	NANCHANG	~ 1 Jan 1984	UNK	Birth	
					FUCHOW	14 Aug 1984	UNK	Transfer	
156	?	5 Feb 1984	119	120	CANTON CH	5 Feb 1984	UNK	Birth	
						~ 5 Feb 1984		Death	
157	M	19 Mar 1984	112	73	NANCHANG	19 Mar 1984	UNK	Birth	SZ01
					SUCHOU	1 Feb 1986	UNK	Transfer	
158	?	31 May 1984	65	75	CANTON CH	31 May 1984	UNK	Birth	
						~ 7 Jun 1984		Death	
159	?	31 May 1984	65	75	CANTON CH	31 May 1984	UNK	Birth	
					CHENGCHOW	15 Oct 1984	UNK	Transfer	
						~ 1985		Death	
160	F	~ Jul 1984	38	51	CHUNGKING	~ Jul 1984	UNK	Birth	
					CHENGCHOW	10 Apr 1986	UNK	Transfer	
						????		Death	
161	M	~ Jul 1984	38	51	CHUNGKING	~ Jul 1984	UNK	Birth	
						~ Jul 1984		Death	

ud #	Sex	Birth Date	Sire	Dam	Location	Date	Local ID	Event	Name
162	F	~ Jul 1984	38	51	CHUNGKING	~ Jul 1984	UNK	Birth	
						~ Jul 1984		Death	
163	F	~ 1 Aug 1984	27	140	SHANGHAI	~ 1 Aug 1984	UNK	Birth	
					FUCHOW	~ 1985	UNK	Transfer	
						????		Death	
164	?	10 Nov 1984	119	120	CANTON CH	10 Nov 1984	UNK	Birth	
						~10 Nov 1984		Death	
165	M	22 Mar 1985	27	111	SHANGHAI	22 Mar 1985	UNK	Birth	
						22 Mar 1985		Death	
166	M	22 Mar 1985	27	111	SHANGHAI	22 Mar 1985	UNK	Birth	
						22 Mar 1985		Death	
167	F	22 Mar 1985	27	111	SHANGHAI	22 Mar 1985	UNK	Birth	
						22 Mar 1985		Death	
168	?	1 Apr 1985	119	120	CANTON CH	1 Apr 1985	UNK	Birth	
						~ 1 Apr 1985		Death	
169	?	1 Apr 1985	119	120	CANTON CH	1 Apr 1985	UNK	Birth	
						~ 1 Apr 1985		Death	
170	F	26 May 1985	38	51	CHUNGKING	26 May 1985	UNK	Birth	XIAO FANG
					SHIH CHIA	~ 1 Dec 1985	UNK	Transfer	
171	F	26 May 1985	38	51	CHUNGKING	26 May 1985	UNK	Birth	XIAO SAN
						~ Jan 1988		Death	
172	M	26 May 1985	38	51	CHUNGKING	26 May 1985	UNK	Birth	
					SHIH CHIA	1 Dec 1985	UNK	Transfer	
					SUCHOU	~ 1 Oct 1993	UNK	Transfer	
173	F	30 May 1985	27	111	SHANGHAI	30 May 1985	UNK	Birth	
					UNKNOWN	~ 1986	UNK	Transfer	
						????		Death	
174	M	31 May 1985	27	101	SHANGHAI	31 May 1985	UNK	Birth	
					KUEIYANG	1 Nov 1985	UNK	Transfer	
						~ 1991		Death	
175	F	31 May 1985	27	101	SHANGHAI	31 May 1985	UNK	Birth	
					KUEIYANG	1 Nov 1985	UNK	Transfer	
176	M	8 Jul 1985	27	140	SHANGHAI	8 Jul 1985	UNK	Birth	
						13 Jul 1985		Death	

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Stud #	Sex	Birth Date	Sire	Dam	Location	Date	Local ID	Event	Name
177	M	8 Jul 1985	27	140	SHANGHAI	8 Jul 1985	UNK	Birth	
						~ Aug 1985		Death	
178	F	8 Jul 1985	27	140	SHANGHAI	8 Jul 1985	UNK	Birth	
						14 Jul 1985		Death	
179	M	11 Oct 1985	27	111	SHANGHAI	11 Oct 1985	UNK	Birth	
						11 Oct 1985		Death	
180	F	11 Oct 1985	27	111	SHANGHAI	11 Oct 1985	UNK	Birth	
						11 Oct 1985		Death	
181	?	16 Oct 1985	119	120	CANTON CH	16 Oct 1985	UNK	Birth	
						20 Oct 1985		Death	
182	?	16 Oct 1985	119	120	CANTON CH	16 Oct 1985	UNK	Birth	
						~16 Oct 1985		Death	
183	M	~ 1986	112	73	NANCHANG	~ 1986	UNK	Birth	XIAO NAN
					HEFEI	~ 1987	UNK	Transfer	
184	M	1 Feb 1986	128	140	SHANGHAI	1 Feb 1986	UNK	Birth	
						1 Feb 1986		Death	
185	F	1 Feb 1986	128	140	SHANGHAI	1 Feb 1986	UNK	Birth	
					UNKNOWN	~ 1987	UNK	Transfer	
						????		Death	
186	M	~ 1 Oct 1986	128	140	SHANGHAI	~ 1 Oct 1986	UNK	Birth	
						~ 1 Oct 1986		Death	
187	F	~ 1 Oct 1986	128	140	SHANGHAI	~ 1 Oct 1986	UNK	Birth	
						~ 1 Oct 1986		Death	
188	?	23 Oct 1986	119	120	CANTON CH	23 Oct 1986	UNK	Birth	
						~23 Oct 1986		Death	
189	?	23 Oct 1986	119	120	CANTON CH	23 Oct 1986	UNK	Birth	
						~23 Oct 1986		Death	
190	?	23 Oct 1986	119	120	CANTON CH	23 Oct 1986	UNK	Birth	
						25 Oct 1986		Death	
191	?	3 May 1987	119	120	CANTON CH	3 May 1987	UNK	Birth	
						~ 3 May 1987		Death	
192	?	3 May 1987	119	120	CANTON CH	3 May 1987	UNK	Birth	
						~ 3 May 1987		Death	

ud #	Sex	Birth Date	Sire	Dam	Location	Date	Local ID	Event	Name
193	?	3 May 1987	119	120	CANTON CH	3 May 1987	UNK	Birth	
						~ 3 May 1987		Death	
194	M	13 May 1987	69	111	SHANGHAI	13 May 1987	UNK	Birth	
						~ Nov 1987		Death	
195	M	13 May 1987	69	111	SHANGHAI	13 May 1987	UNK	Birth	
						~ Nov 1987		Death	
196	F	13 May 1987	69	111	SHANGHAI	13 May 1987	UNK	Birth	
					UNKNOWN	~ 1988	UNK	Transfer	
						????		Death	
197	?	30 Sep 1987	65	75	CANTON CH	30 Sep 1987	UNK	Birth	
						30 Sep 1987		Death	
198	?	31 Oct 1987	119	120	CANTON CH	31 Oct 1987	UNK	Birth	
						~31 Oct 1987		Death	
199	M	13 Mar 1988	65	75	CANTON CH	13 Mar 1988	UNK	Birth	HUA HUA
					LUOYANG	~ Sep 1988	UNK	Transfer	
200	F	13 Mar 1988	65	75	CANTON CH	13 Mar 1988	UNK	Birth	HUA HUA
					LUOYANG	~ Sep 1988	UNK	Transfer	
201	M	13 Mar 1988	65	75	CANTON CH	13 Mar 1988	UNK	Birth	
					XINXIANG	25 Sep 1988	UNK	Transfer	
						~ 1989		Death	
202	M	26 Apr 1988	157	147	SUCHOU	26 Apr 1988	UNK	Birth	
						~ 1 Oct 1989		Death	
203	F	26 Apr 1988	157	147	SUCHOU	26 Apr 1988	UNK	Birth	
						~ 1 Jan 1989		Death	
204	M	26 Apr 1988	157	147	SUCHOU	26 Apr 1988	UNK	Birth	
						26 Apr 1988		Death	
205	?	12 May 1988	119	120	CANTON CH	12 May 1988	UNK	Birth	
						~12 May 1988		Death	
206	?	12 May 1988	119	120	CANTON CH	12 May 1988	UNK	Birth	
						~12 May 1988		Death	
207	?	12 May 1988	119	120	CANTON CH	12 May 1988	UNK	Birth	
						~12 May 1988		Death	
208	M	1 Jun 1988	69	111	SHANGHAI	1 Jun 1988	UNK	Birth	DUAN WEI

SOUTH CHINA TIGER Studbook
(Panthera tigris amoyensis)

Stud #	Sex	Birth Date	Sire	Dam	Location	Date	Local ID	Event	Name
209	F	1 Jun 1988	69	111	SHANGHAI	1 Jun 1988	UNK	Birth	XIAO FAN
210	M	1 Jun 1988	69	111	SHANGHAI	1 Jun 1988	UNK	Birth	
						~ 1989		Death	
211	?	17 Sep 1988	119	120	CANTON CH	17 Sep 1988	UNK	Birth	
						~17 Sep 1988		Death	
212	?	13 Mar 1989	119	120	CANTON CH	13 Mar 1989	UNK	Birth	
						13 Mar 1989		Death	
213	?	13 Mar 1989	119	120	CANTON CH	13 Mar 1989	UNK	Birth	
						13 Mar 1989		Death	
214	?	13 Mar 1989	119	120	CANTON CH	13 Mar 1989	UNK	Birth	
						13 Mar 1989		Death	
215	M	13 Apr 1989	157	147	SUCHOU	13 Apr 1989	UNK	Birth	KANG KANG
					SHENZHEN	23 Jul 1989	UNK	Transfer	
					CANTON CH	21 Jan 1992	UNK	Transfer	
216	F	13 Apr 1989	157	147	SUCHOU	13 Apr 1989	UNK	Birth	ZHUANG ZHU
					SHENZHEN	23 Jul 1989	UNK	Transfer	
					CANTON CH	21 Jan 1992	UNK	Transfer	
217	M	13 Apr 1989	157	147	SUCHOU	13 Apr 1989	UNK	Birth	
						~ 1 Dec 1992		Death	
218	F	25 May 1989	69	111	SHANGHAI	25 May 1989	UNK	Birth	
					NANPING E	1 Jul 1990	UNK	Transfer	
						~ 1992		Death	
219	M	19 Jun 1989	69	140	SHANGHAI	19 Jun 1989	UNK	Birth	
						19 Jun 1989		Death	
220	M	30 Nov 1989	157	147	SUCHOU	30 Nov 1989	UNK	Birth	
						30 Nov 1989		Death	
221	F	30 Nov 1989	157	147	SUCHOU	30 Nov 1989	UNK	Birth	
						30 Nov 1989		Death	
222	F	30 Nov 1989	157	147	SUCHOU	30 Nov 1989	UNK	Birth	
						30 Nov 1989		Death	
223	F	30 Nov 1989	157	147	SUCHOU	30 Nov 1989	UNK	Birth	
						30 Nov 1989		Death	
224	M	17 Jun 1990	69	111	SHANGHAI	17 Jun 1990	UNK	Birth	

ud #	Sex	Birth Date	Sire	Dam	Location	Date	Local ID	Event	Name
						17 Jun 1990		Death	
225	F	17 Jun 1990	69	111	SHANGHAI	17 Jun 1990	UNK	Birth	
						~ 1 Dec 1990		Death	
226	M	30 Jun 1990	157	147	SUCHOU	30 Jun 1990	UNK	Birth	XIAO SU
					SHANGHAI	~ Dec 1990	UNK	Transfer	
227	M	30 Jun 1990	157	147	SUCHOU	30 Jun 1990	UNK	Birth	SU YU
					CHUNGKING	~ Dec 1990	UNK	Transfer	
228	F	17 Jul 1990	119	120	CANTON CH	17 Jul 1990	UNK	Birth	XIN XIN
229	F	17 Jul 1990	69	111	SHANGHAI	17 Jul 1990	UNK	Birth	FU YU
					CHUNGKING	~ Dec 1990	UNK	Transfer	
230	?	17 Jul 1990	119	120	CANTON CH	17 Jul 1990	UNK	Birth	
						~17 Jul 1990		Death	
231	?	17 Jul 1990	119	120	CANTON CH	17 Jul 1990	UNK	Birth	
						~17 Jul 1990		Death	
232	?	5 Jan 1991	119	120	CANTON CH	5 Jan 1991	UNK	Birth	
						~ 5 Jan 1991		Death	
233	M	26 Mar 1991	157	147	SUCHOU	26 Mar 1991	UNK	Birth	
					NANTONG	~ Jan 1992	UNK	Transfer	
234	M	26 Mar 1991	157	147	SUCHOU	26 Mar 1991	UNK	Birth	
					SHIH CHIA	~ Oct 1993	UNK	Transfer	
235	M	26 Mar 1991	157	147	SUCHOU	26 Mar 1991	UNK	Birth	
					TIANJIN	~ 1992	UNK	Transfer	
236	M	4 Jun 1991	69	111	SHANGHAI	4 Jun 1991	UNK	Birth	AH DA
237	M	4 Jun 1991	69	111	SHANGHAI	4 Jun 1991	UNK	Birth	AH NI
238	M	13 Jun 1991	69	140	SHANGHAI	13 Jun 1991	UNK	Birth	XIAO HONG
239	?	13 Jun 1991	119	120	CANTON CH	13 Jun 1991	UNK	Birth	
						~13 Jun 1991		Death	
240	?	13 Jun 1991	119	120	CANTON CH	13 Jun 1991	UNK	Birth	
						~13 Jun 1991		Death	
241	F	18 Feb 1992	157	147	SUCHOU	18 Feb 1992	UNK	Birth	SZ04
242	M	18 Feb 1992	157	147	SUCHOU	18 Feb 1992	UNK	Birth	SZ05

SOUTH CHINA TIGER Studbook
(Panthera tigris amoyensis)

Stud #	Sex	Birth Date	Sire	Dam	Location	Date	Local ID	Event	Name
243	M	18 Feb 1992	157	147	SUCHOU	18 Feb 1992	UNK	Birth	
					CHANGCHUN	1 Jun 1992	UNK	Transfer	
244	M	18 Feb 1992	157	147	SUCHOU	18 Feb 1992	UNK	Birth	
					SHENZHEN	~ 1 Jun 1992	UNK	Transfer	
245	M	26 May 1992	155	64	FUCHOW	26 May 1992	UNK	Birth	
					NANPING E	~ Feb 1993	UNK	Transfer	
246	F	26 May 1992	155	64	FUCHOW	26 May 1992	UNK	Birth	
247	M	21 Jun 1992	69	140	SHANGHAI	21 Jun 1992	UNK	Birth	HE QING
					WUHAN	18 Apr 1995	UNK	Transfer	
248	M	21 Jun 1992	69	140	SHANGHAI	21 Jun 1992	UNK	Birth	
						1 Jul 1993		Death	
249	M	21 Jun 1992	69	140	SHANGHAI	21 Jun 1992	UNK	Birth	
					NANNING	1 Apr 1994	UNK	Transfer	
250	F	23 Oct 1992	157	147	SUCHOU	23 Oct 1992	UNK	Birth	SZ06
251	M	23 Oct 1992	157	147	SUCHOU	23 Oct 1992	UNK	Birth	SZ07
252	F	23 Oct 1992	157	147	SUCHOU	23 Oct 1992	UNK	Birth	SZ08
253	F	23 Oct 1992	157	147	SUCHOU	23 Oct 1992	UNK	Birth	
						23 Oct 1992		Death	
254	M	23 Oct 1992	157	147	SUCHOU	23 Oct 1992	UNK	Birth	
					TANGSHAN	~ 1993	UNK	Transfer	
						~ 1994		Death	
255	F	19 Mar 1994	226	140	SHANGHAI	19 Mar 1994	UNK	Birth	XIAO QING
256	M	27 May 1994	157	147	SUCHOU	27 May 1994	UNK	Birth	
					FUCHOW	~ 1 Nov 1994	UNK	Transfer	
257	F	27 May 1994	157	147	SUCHOU	27 May 1994	UNK	Birth	
						27 May 1994		Death	
258	M	27 May 1994	157	147	SUCHOU	27 May 1994	UNK	Birth	
						1 Jul 1994		Death	
259	?	1 Sep 1994	119	216	CANTON CH	1 Sep 1994	UNK	Birth	
						1 Sep 1994		Death	
260	M	10 Feb 1995	157	147	SUCHOU	10 Feb 1995	UNK	Birth	

ud #	Sex	Birth Date	Sire	Dam	Location	Date	Local ID	Event	Name
						17 Feb 1995		Death	
261	M	10 Feb 1995	157	147	SUCHOU	10 Feb 1995	UNK	Birth	
						17 Feb 1995		Death	
262	F	10 Feb 1995	157	147	SUCHOU	10 Feb 1995	UNK	Birth	
						17 Feb 1995		Death	
263	F	10 Feb 1995	157	147	SUCHOU	10 Feb 1995	UNK	Birth	
						17 Feb 1995		Death	

TALS: 131.100.32 (263)

estricted to: (Panthera tigris amoyensis)
Status: Living by 11 Aug 1995

ud #	Sex	Birth Date	Sire	Dam	Location	Date	Local ID	Event	Name
75	F	10 Jul 1976	27	29	SHANGHAI	10 Jul 1976	UNK	Birth	HU NU
					CANTON CH	31 Aug 1977	UNK	Transfer	
					NANNING	~ 1 Nov 1994	UNK	Transfer	
94	M	17 Dec 1978	38	51	CHUNGKING	17 Dec 1978	UNK	Birth	XIAO HUA
					NANNING	~ 1986	UNK	Transfer	
103	M	10 Sep 1979	38	51	CHUNGKING	10 Sep 1979	UNK	Birth	DONG DONG
					KUEIYANG	1 Mar 1980	UNK	Transfer	
110	M	8 Apr 1980	27	26	SHANGHAI	8 Apr 1980	UNK	Birth	
					XIAMEN	18 Oct 1980	UNK	Transfer	
111	F	8 Apr 1980	27	26	SHANGHAI	8 Apr 1980	UNK	Birth	AH YI
119	M	30 Nov 1980	65	75	CANTON CH	30 Nov 1980	UNK	Birth	QI QI
120	F	30 Nov 1980	65	75	CANTON CH	30 Nov 1980	UNK	Birth	QU QU
127	M	12 Jun 1981	38	51	CHUNGKING	12 Jun 1981	UNK	Birth	DA QI
					BAOTING	1 Dec 1981	UNK	Transfer	
					SHIH CHIA	16 Apr 1991	UNK	Transfer	
					BAOTING	~ 1 Jun 1992	UNK	Transfer	
136	M	29 Apr 1982	27	79	SHANGHAI	29 Apr 1982	UNK	Birth	HAI XIAO
					CHUNGKING	16 Nov 1982	UNK	Transfer	
					NANCHONG	15 Jul 1994	UNK	Transfer	
140	F	4 May 1982	38	51	CHUNGKING	4 May 1982	UNK	Birth	QING QING
					SHANGHAI	24 Nov 1982	UNK	Transfer	
141	F	4 May 1982	38	51	CHUNGKING	4 May 1982	UNK	Birth	MEI MEI
147	F	20 Apr 1983	112	73	NANCHANG	20 Apr 1983	UNK	Birth	
					SUCHOU	~ 1 Sep 1983	UNK	Transfer	
151	M	29 Jun 1983	27	101	SHANGHAI	29 Jun 1983	UNK	Birth	0049
					CHICHIHAL	21 Oct 1983	UNK	Transfer	
155	M	~ 1 Jan 1984	112	73	NANCHANG	~ 1 Jan 1984	UNK	Birth	
					FUCHOW	14 Aug 1984	UNK	Transfer	
157	M	19 Mar 1984	112	73	NANCHANG	19 Mar 1984	UNK	Birth	SZ01
					SUCHOU	1 Feb 1986	UNK	Transfer	
170	F	26 May 1985	38	51	CHUNGKING	26 May 1985	UNK	Birth	XIAO FANG
					SHIH CHIA	~ 1 Dec 1985	UNK	Transfer	

SOUTH CHINA TIGER Studbook

Restricted to: (Panthera tigris amoyensis)

Status: Living by 11 Aug 1995

Stud #	Sex	Birth Date	Sire	Dam	Location	Date	Local ID	Event	Name
172	M	26 May 1985	38	51	CHUNGKING	26 May 1985	UNK	Birth	
					SHIH CHIA	1 Dec 1985	UNK	Transfer	
					SUCHOU	~ 1 Oct 1993	UNK	Transfer	
175	F	31 May 1985	27	101	SHANGHAI	31 May 1985	UNK	Birth	
					KUEIYANG	1 Nov 1985	UNK	Transfer	
183	M	~ 1986	112	73	NANCHANG	~ 1986	UNK	Birth	XIAO NAN
					HEFEI	~ 1987	UNK	Transfer	
199	M	13 Mar 1988	65	75	CANTON CH	13 Mar 1988	UNK	Birth	HUA HUA
					LUOYANG	~ Sep 1988	UNK	Transfer	
200	F	13 Mar 1988	65	75	CANTON CH	13 Mar 1988	UNK	Birth	HUA HUA
					LUOYANG	~ Sep 1988	UNK	Transfer	
208	M	1 Jun 1988	69	111	SHANGHAI	1 Jun 1988	UNK	Birth	DUAN WEI
209	F	1 Jun 1988	69	111	SHANGHAI	1 Jun 1988	UNK	Birth	XIAO FAN
215	M	13 Apr 1989	157	147	SUCHOU	13 Apr 1989	UNK	Birth	KANG KANG
					SHENZHEN	23 Jul 1989	UNK	Transfer	
					CANTON CH	21 Jan 1992	UNK	Transfer	
216	F	13 Apr 1989	157	147	SUCHOU	13 Apr 1989	UNK	Birth	ZHUANG ZHU
					SHENZHEN	23 Jul 1989	UNK	Transfer	
					CANTON CH	21 Jan 1992	UNK	Transfer	
226	M	30 Jun 1990	157	147	SUCHOU	30 Jun 1990	UNK	Birth	XIAO SU
					SHANGHAI	~ Dec 1990	UNK	Transfer	
227	M	30 Jun 1990	157	147	SUCHOU	30 Jun 1990	UNK	Birth	SU YU
					CHUNGKING	~ Dec 1990	UNK	Transfer	
228	F	17 Jul 1990	119	120	CANTON CH	17 Jul 1990	UNK	Birth	XIN XIN
229	F	17 Jul 1990	69	111	SHANGHAI	17 Jul 1990	UNK	Birth	FU YU
					CHUNGKING	~ Dec 1990	UNK	Transfer	
233	M	26 Mar 1991	157	147	SUCHOU	26 Mar 1991	UNK	Birth	
					NANTONG	~ Jan 1992	UNK	Transfer	
234	M	26 Mar 1991	157	147	SUCHOU	26 Mar 1991	UNK	Birth	
					SHIH CHIA	~ Oct 1993	UNK	Transfer	
235	M	26 Mar 1991	157	147	SUCHOU	26 Mar 1991	UNK	Birth	
					TIANJIN	~ 1992	UNK	Transfer	

estricted to: (Panthera tigris amoyensis)

Status: Living by 11 Aug 1995

ud #	Sex	Birth Date	Sire	Dam	Location	Date	Local ID	Event	Name
236	M	4 Jun 1991	69	111	SHANGHAI	4 Jun 1991	UNK	Birth	AH DA
237	M	4 Jun 1991	69	111	SHANGHAI	4 Jun 1991	UNK	Birth	AH NI
238	M	13 Jun 1991	69	140	SHANGHAI	13 Jun 1991	UNK	Birth	XIAO HONG
241	F	18 Feb 1992	157	147	SUCHOU	18 Feb 1992	UNK	Birth	SZ04
242	M	18 Feb 1992	157	147	SUCHOU	18 Feb 1992	UNK	Birth	SZ05
243	M	18 Feb 1992	157	147	SUCHOU	18 Feb 1992	UNK	Birth	
					CHANGCHUN	1 Jun 1992	UNK	Transfer	
244	M	18 Feb 1992	157	147	SUCHOU	18 Feb 1992	UNK	Birth	
					SHENZHEN	~ 1 Jun 1992	UNK	Transfer	
245	M	26 May 1992	155	64	FUCHOW	26 May 1992	UNK	Birth	
					NANPING E	~ Feb 1993	UNK	Transfer	
246	F	26 May 1992	155	64	FUCHOW	26 May 1992	UNK	Birth	
247	M	21 Jun 1992	69	140	SHANGHAI	21 Jun 1992	UNK	Birth	HE QING
					WUHAN	18 Apr 1995	UNK	Transfer	
249	M	21 Jun 1992	69	140	SHANGHAI	21 Jun 1992	UNK	Birth	
					NANNING	1 Apr 1994	UNK	Transfer	
250	F	23 Oct 1992	157	147	SUCHOU	23 Oct 1992	UNK	Birth	SZ06
251	M	23 Oct 1992	157	147	SUCHOU	23 Oct 1992	UNK	Birth	SZ07
252	F	23 Oct 1992	157	147	SUCHOU	23 Oct 1992	UNK	Birth	SZ08
255	F	19 Mar 1994	226	140	SHANGHAI	19 Mar 1994	UNK	Birth	XIAO QING
256	M	27 May 1994	157	147	SUCHOU	27 May 1994	UNK	Birth	
					FUCHOW	~ 1 Nov 1994	UNK	Transfer	

OTALS: 30.18.0 (48)

Location Glossary - SOUTH CHINA TIGER Studbook

BAOTING Baoting People's Park
Baoting, Hopeh, China.

CANTON CH CANTON ZOOLOGICAL GARDEN
GUANGZHOU, Kwangtung, CHINA.

CHANGCHUN Changchun Zoological Garden
Changchun, Kirin, China.

CHICHIHAL Chichihal Zoological Garden
Chichihal, Heilungkiang, China.

CHUNGKING Chungking Zoological Garden
Chungking, Szechwan, China.

FUCHOW Fuchow West Lake Park
Fuchow, Fukien, China.

HEFEI _____

KUEIYANG Kueiyang Qianling Park
Kueiyang, Kweichow, China.

LUOYANG Luoyang Zoological Garden
Luoyang, Henan, China.

NANCHANG Nanchang Zoological Garden
Nanchang, Kiangsi, China.

NANCHONG _____

NANNING Nanning Zoological Garden
Nanning, Kwangsi, China.

NANPING E Nanping E Zoological Garden
Nanping E, Fujian, China.

NANTONG Nantong Zoological Garden
Nantong, Jiangsu, China.

SHANGHAI Shanghai Zoological Garden
Shanghai, Kiangsu, China.

SHENZHEN _____

SHIH CHIA Shih-chia-Chuang Zoological Garden
Shih-chia-Chuang, Hopeh, China.

SUCHOU Suchou Zoological Garden
Suchou, Jiangsu, China.

TIANJIN Tianjin Zoological Park
Tianjin, Tiankin, China.

WUHAN Wuhan Zoo
Ma Cang Hu Lu, Hanyang, Wuhan, Hubei Province, Rep. Of China, 86 27 444385.

XIAMEN Xiamen Zoological Garden
Xiamen, Fujian, China.

ORDERED LISTS OF MEAN KINSHIP BY SEX:

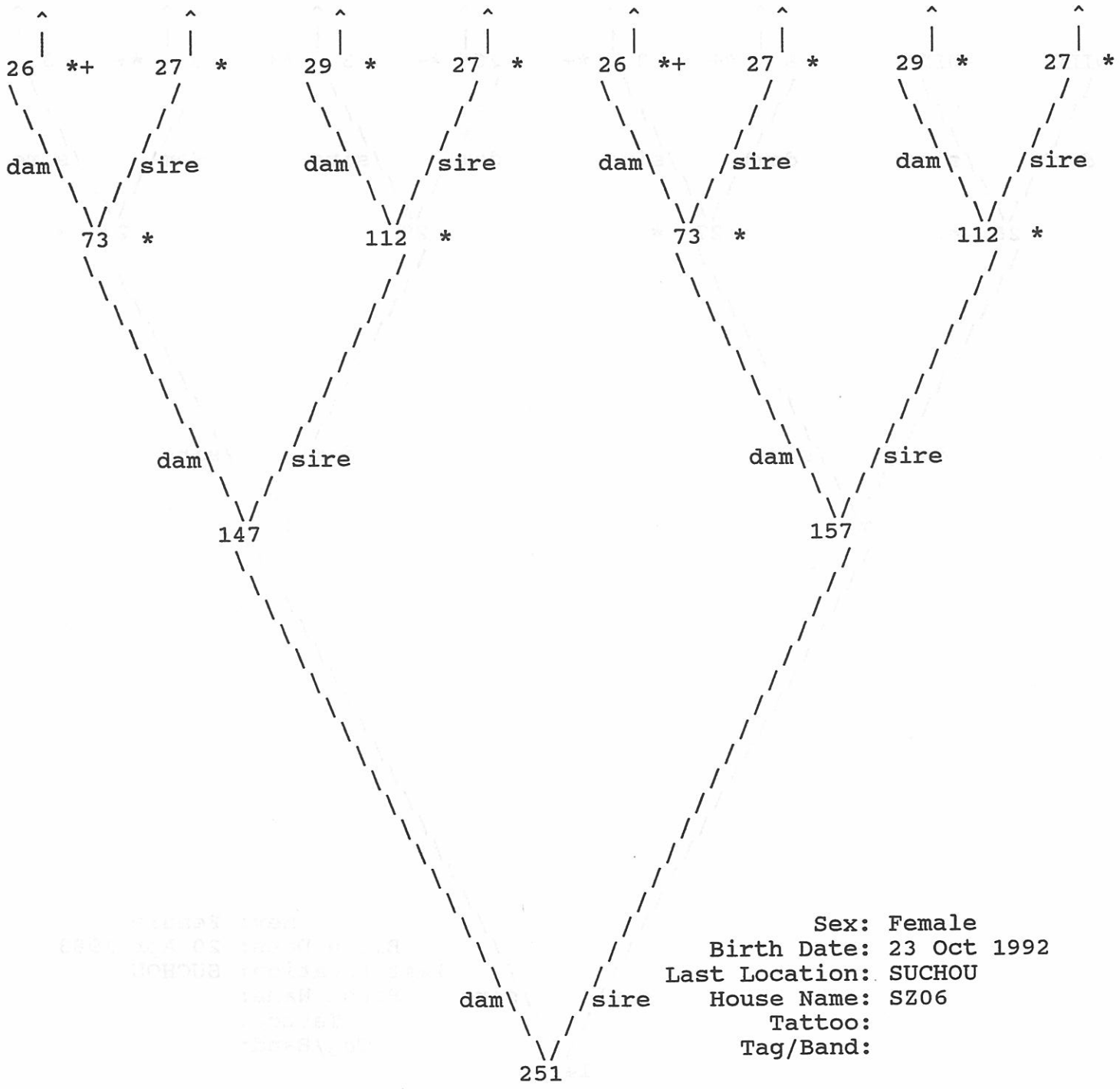
Rank	Males	MK	Age	Location	Females	MK	Age	Location
1	52	.0833	16	Nanning	207	.0833	13	Chongqing
2	49	.0833	16	Guiyang	55	.0833	10	Shih chia
3	56	.0833	14	Baoting	60	.0918	13	Shanghai
4	75	.0833	10	Suzhou	139	.1967	5	Chongqing
5	106	.1403	4	Shanghai	102	.1967	7	Shanghai
6	109	.1403	3	Wuhan	112	.1982	1	Shanghai
7	111	.1403	3	Nanning	143	.2026	7	Luoyang
8	84	.1903	15	Xiamen	92	.2033	15	Shanghai
9	107	.1967	4	Shanghai	118	.2050	14	Guangzhou
10	108	.1967	4	Shanghai	96	.2070	10	Guiyang
11	101	.1967	7	Shanghai	119	.2093	5	Guangzhou
12	142	.2026	7	Luoyang	113	.2235	19	Nanning
13	117	.2050	14	Guangzhou	174	.2387	3	Fuzhou
14	93	.2057	13	Nanchong	126	.2913	12	Suzhou
15	144	.2070	12	Chichihal	141	.2954	6	Guangzhou
16	173	.2387	3	Nanping E	127	.2954	3	Suzhou
17	133	.2534	9	Hefei	129	.2954	3	Suzhou
18	123	.2583	11	Fuzhou	131	.2954	3	Suzhou
19	125	.2913	11	Suzhou				
20	140	.2954	6	Guangzhou				
21	138	.2954	5	Chongqing				
22	147	.2954	4	Nantong				
23	149	.2954	4	Shih chia				
24	150	.2954	4	Tianjin				
25	128	.2954	3	Suzhou				
26	145	.2954	3	Changchun				
27	218	.2954	3	Shenzhen				
28	130	.2954	3	Suzhou				
29	221	.2954	1	Fuzhou				
30	134	.2974	5	Shanghai				

GENETIC SUMMARY OF POPULATION

Descendant population Mean Kinship:	0.2179
Gene Diversity:	0.7821
Founder Genome Equivalents:	2.2945
Desc. population mean Kinship Value:	0.2457
Gene Value:	0.7543

Pedigree Chart Report
SOUTH CHINA TIGER Studbook

axon Name: **PANTHERA TIGRIS AMOYENSIS** Studbook Number: **251**

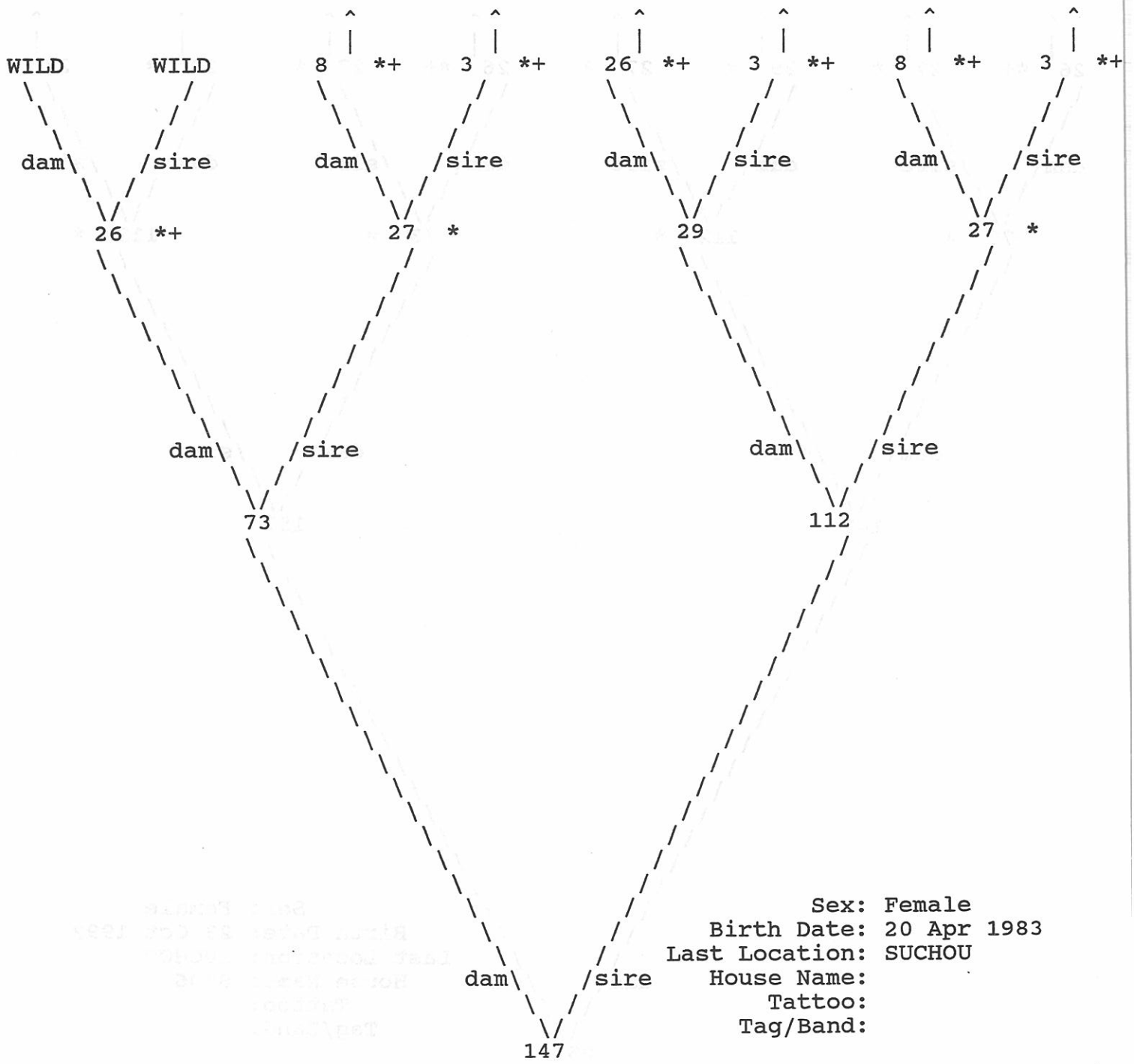


Sex: Female
Birth Date: 23 Oct 1992
Last Location: SUCHOU
House Name: SZ06
Tattoo:
Tag/Band:

· Specimens known to be obtained from the wild...
: Studbook ID's appearing more than once...
· Pedigree Chart continues beyond top of page...

Pedigree Chart Report
SOUTH CHINA TIGER Studbook

Taxon Name: **PANTHERA TIGRIS AMOYENSIS** Studbook Number: **147**



Sex: Female
Birth Date: 20 Apr 1983
Last Location: SUCHOU
House Name:
Tattoo:
Tag/Band:

\+ Specimens known to be obtained from the wild...
* Studbook ID's appearing more than once...
^ Pedigree Chart continues beyond top of page...

Sibling Report
SOUTH CHINA TIGER Studbook

Taxon Name: **PANTHERA TIGRIS AMOYENSIS** Studbook Number: **251**

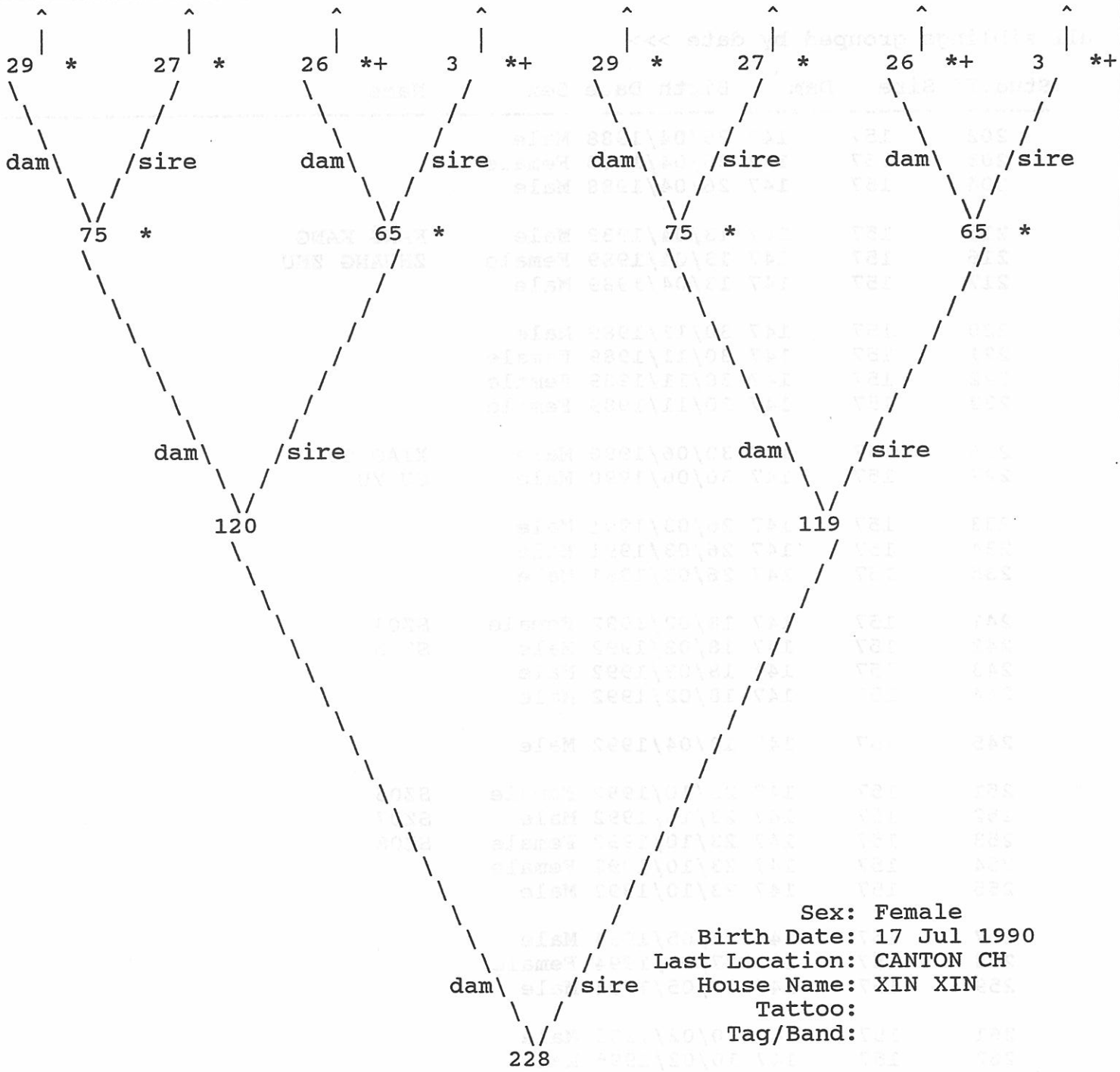
Full siblings grouped by date >>>

	Stud.Id	Sire	Dam	Birth Date	Sex	Name
	202	157	147	26/04/1988	Male	
	203	157	147	26/04/1988	Female	
	204	157	147	26/04/1988	Male	
	215	157	147	13/04/1989	Male	KANG KANG
	216	157	147	13/04/1989	Female	ZHUANG ZHU
	217	157	147	13/04/1989	Male	
	220	157	147	30/11/1989	Male	
	221	157	147	30/11/1989	Female	
	222	157	147	30/11/1989	Female	
	223	157	147	30/11/1989	Female	
	226	157	147	30/06/1990	Male	XIAO SU
	227	157	147	30/06/1990	Male	SU YU
	233	157	147	26/03/1991	Male	
	234	157	147	26/03/1991	Male	
	235	157	147	26/03/1991	Male	
	241	157	147	18/02/1992	Female	SZ04
	242	157	147	18/02/1992	Male	SZ05
	243	157	147	18/02/1992	Male	
	244	157	147	18/02/1992	Male	
	245	157	147	13/04/1992	Male	
*	251	157	147	23/10/1992	Female	SZ06
	252	157	147	23/10/1992	Male	SZ07
	253	157	147	23/10/1992	Female	SZ08
	254	157	147	23/10/1992	Female	
	255	157	147	23/10/1992	Male	
	257	157	147	27/05/1994	Male	
	258	157	147	27/05/1994	Female	
	259	157	147	27/05/1994	Male	
	261	157	147	10/02/1995	Male	
	262	157	147	10/02/1995	Male	
	263	157	147	10/02/1995	Female	
	264	157	147	10/02/1995	Female	

Pedigree Chart Report

SOUTH CHINA TIGER Studbook

Taxon Name: **PANTHERA TIGRIS AMOYENSIS** Studbook Number: **228**



Sex: Female
Birth Date: 17 Jul 1990
Last Location: CANTON CH
House Name: XIN XIN
Tattoo:
Tag/Band:

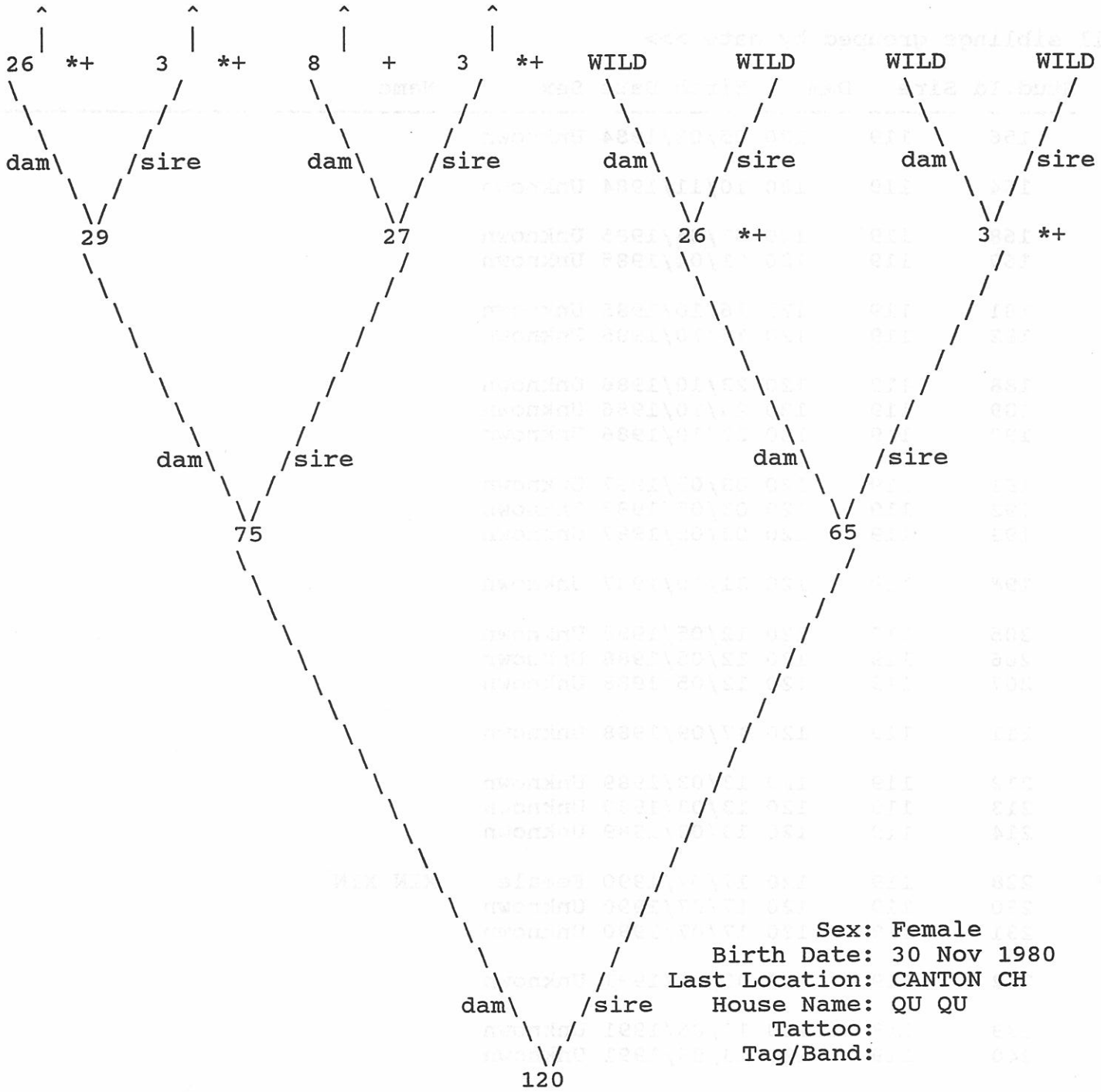
\+ Specimens known to be obtained from the wild...
* Studbook ID's appearing more than once...
^ Pedigree Chart continues beyond top of page...

Compiled by: Li Yinghong, Chongqing Zoo thru Captive Breeding Specialist Group
Data current thru: 28 Apr 1995

SPARKS v1.3
2 May 1995

Pedigree Chart Report
SOUTH CHINA TIGER Studbook

axon Name: **PANTHERA TIGRIS AMOYENSIS** Studbook Number: **120**



Sex: Female
Birth Date: 30 Nov 1980
Last Location: CANTON CH
House Name: QU QU
Tattoo:
Tag/Band:

+ Specimens known to be obtained from the wild...
* Studbook ID's appearing more than once...
^ Pedigree Chart continues beyond top of page...

Compiled by: Li Yinghong, Chongqing Zoo thru Captive Breeding Specialist Group
Data current thru: 28 Apr 1995

SPARKS v1.3
2 May 1995

Sibling Report

SOUTH CHINA TIGER Studbook

Taxon Name: **PANTHERA TIGRIS AMOYENSIS** Studbook Number: **228**

Full siblings grouped by date >>>

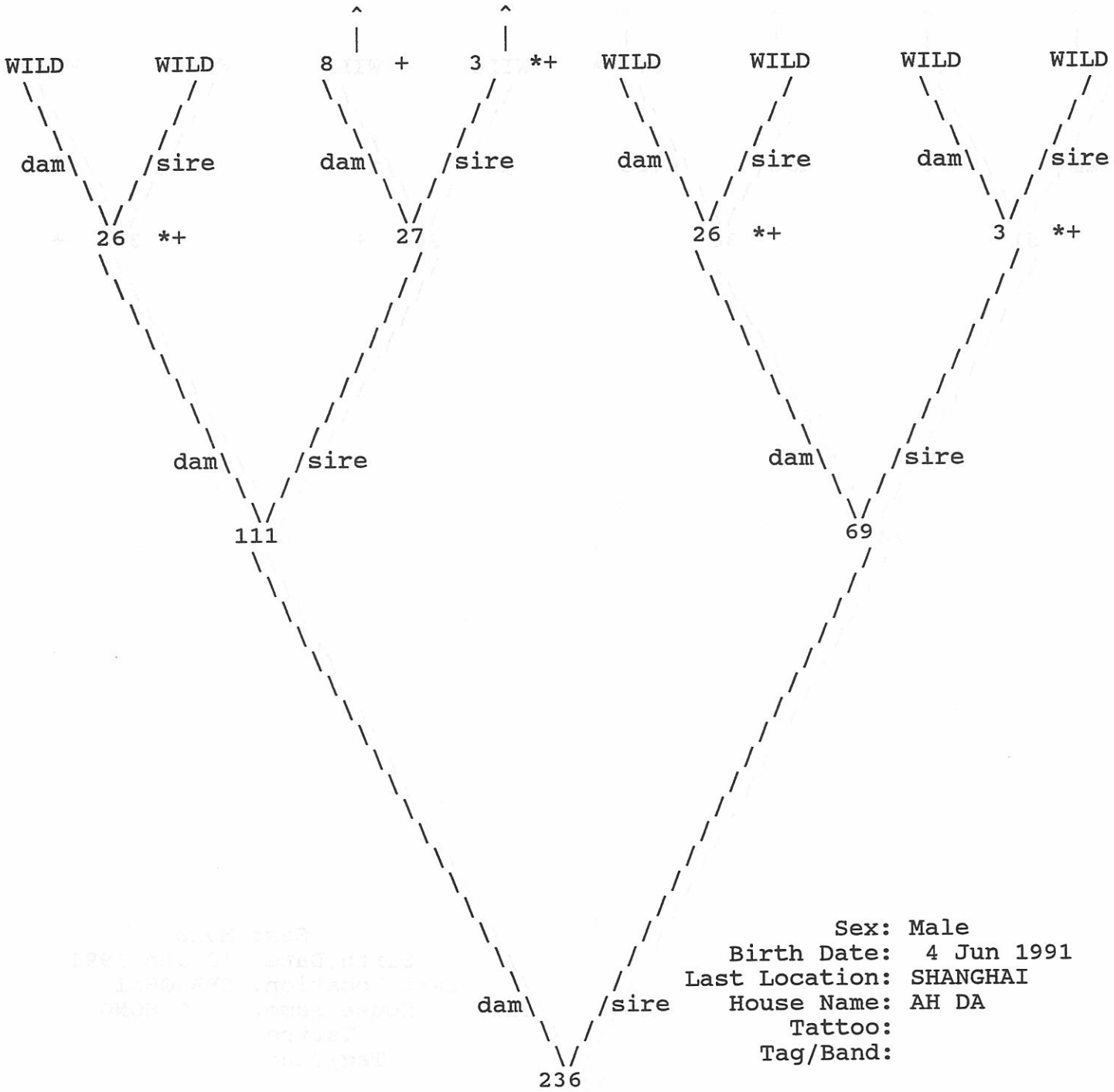
	Stud.Id	Sire	Dam	Birth Date	Sex	Name
	156	119	120	05/02/1984	Unknown	
	164	119	120	10/11/1984	Unknown	
	168	119	120	01/04/1985	Unknown	
	169	119	120	01/04/1985	Unknown	
	181	119	120	16/10/1985	Unknown	
	182	119	120	16/10/1985	Unknown	
	188	119	120	23/10/1986	Unknown	
	189	119	120	23/10/1986	Unknown	
	190	119	120	23/10/1986	Unknown	
	191	119	120	03/05/1987	Unknown	
	192	119	120	03/05/1987	Unknown	
	193	119	120	03/05/1987	Unknown	
	198	119	120	31/10/1987	Unknown	
	205	119	120	12/05/1988	Unknown	
	206	119	120	12/05/1988	Unknown	
	207	119	120	12/05/1988	Unknown	
	211	119	120	17/09/1988	Unknown	
	212	119	120	13/03/1989	Unknown	
	213	119	120	13/03/1989	Unknown	
	214	119	120	13/03/1989	Unknown	
*	228	119	120	17/07/1990	Female	XIN XIN
	230	119	120	17/07/1990	Unknown	
	231	119	120	17/07/1990	Unknown	
	232	119	120	05/01/1991	Unknown	
	239	119	120	13/06/1991	Unknown	
	240	119	120	13/06/1991	Unknown	

* Requested specimen...

Half siblings grouped by date >>>

Pedigree Chart Report
SOUTH CHINA TIGER Studbook

axon Name: **PANTHERA TIGRIS AMOYENSIS** Studbook Number: **236**



Sex: Male
Birth Date: 4 Jun 1991
Last Location: SHANGHAI
House Name: AH DA
Tattoo:
Tag/Band:

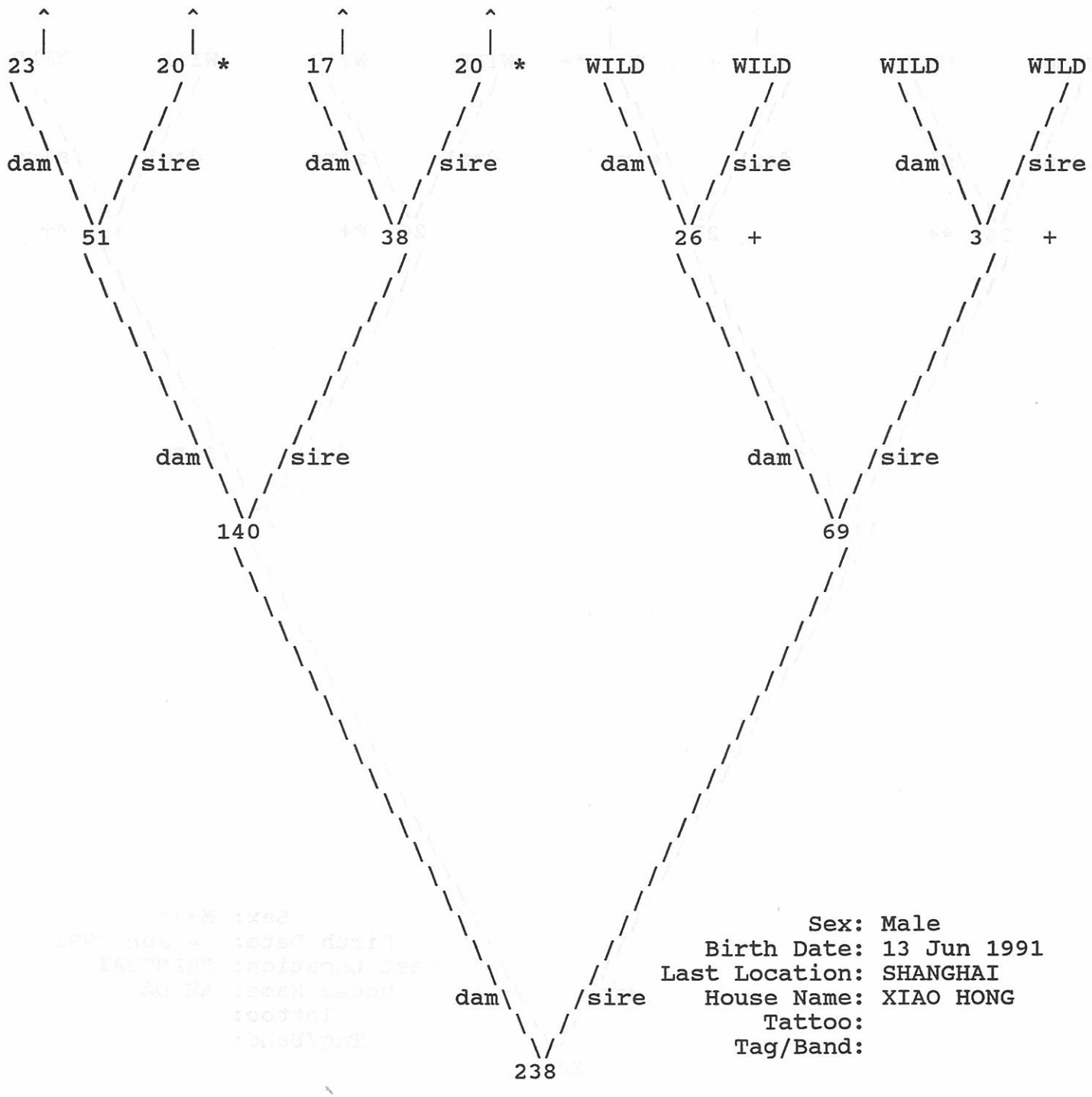
\+ Specimens known to be obtained from the wild...
* Studbook ID's appearing more than once...
^ Pedigree Chart continues beyond top of page...

Compiled by: Li Yinghong, Chongqing Zoo thru Captive Breeding Specialist Group
Data current thru: 28 Apr 1995

SPARKS v1.3
2 May 1995

Pedigree Chart Report
SOUTH CHINA TIGER Studbook Page 1

Taxon Name: **PANTHERA TIGRIS AMOYENSIS** Studbook Number: **238**



Sex: Male
Birth Date: 13 Jun 1991
Last Location: SHANGHAI
House Name: XIAO HONG
Tattoo:
Tag/Band:

\+ Specimens known to be obtained from the wild...
* Studbook ID's appearing more than once...
^ Pedigree Chart continues beyond top of page...

Sibling Report
SOUTH CHINA TIGER Studbook

Taxon Name: **PANTHERA TIGRIS AMOYENSIS** Studbook Number: **236**

Full siblings grouped by date >>>

	Stud.Id	Sire	Dam	Birth Date	Sex	Name
	194	69	111	13/05/1987	Male	
	195	69	111	13/05/1987	Male	
	196	69	111	13/05/1987	Female	
	208	69	111	01/06/1988	Male	DUAN WEI
	209	69	111	01/06/1988	Female	XIAO FAN
	210	69	111	01/06/1988	Male	
	218	69	111	25/05/1989	Female	
	224	69	111	17/06/1990	Male	
	225	69	111	17/06/1990	Female	
	229	69	111	17/07/1990	Female	FU YU
*	236	69	111	04/06/1991	Male	AH DA
	237	69	111	04/06/1991	Male	AH NI

* Requested specimen...

Half siblings grouped by date >>>

Stud.Id	Sire	Dam	Birth Date	Sex	Name
138	27	111	29/04/1982	Male	AH HAI
139	27	111	29/04/1982	Male	
148	27	111	30/05/1983	Female	
165	27	111	22/03/1985	Male	
166	27	111	22/03/1985	Male	
167	27	111	22/03/1985	Female	
173	27	111	30/05/1985	Female	
179	27	111	11/10/1985	Male	
180	27	111	11/10/1985	Female	
219	69	140	19/06/1989	Male	
238	69	140	13/06/1991	Male	XIAO HONG
248	69	140	21/06/1992	Male	HE QING

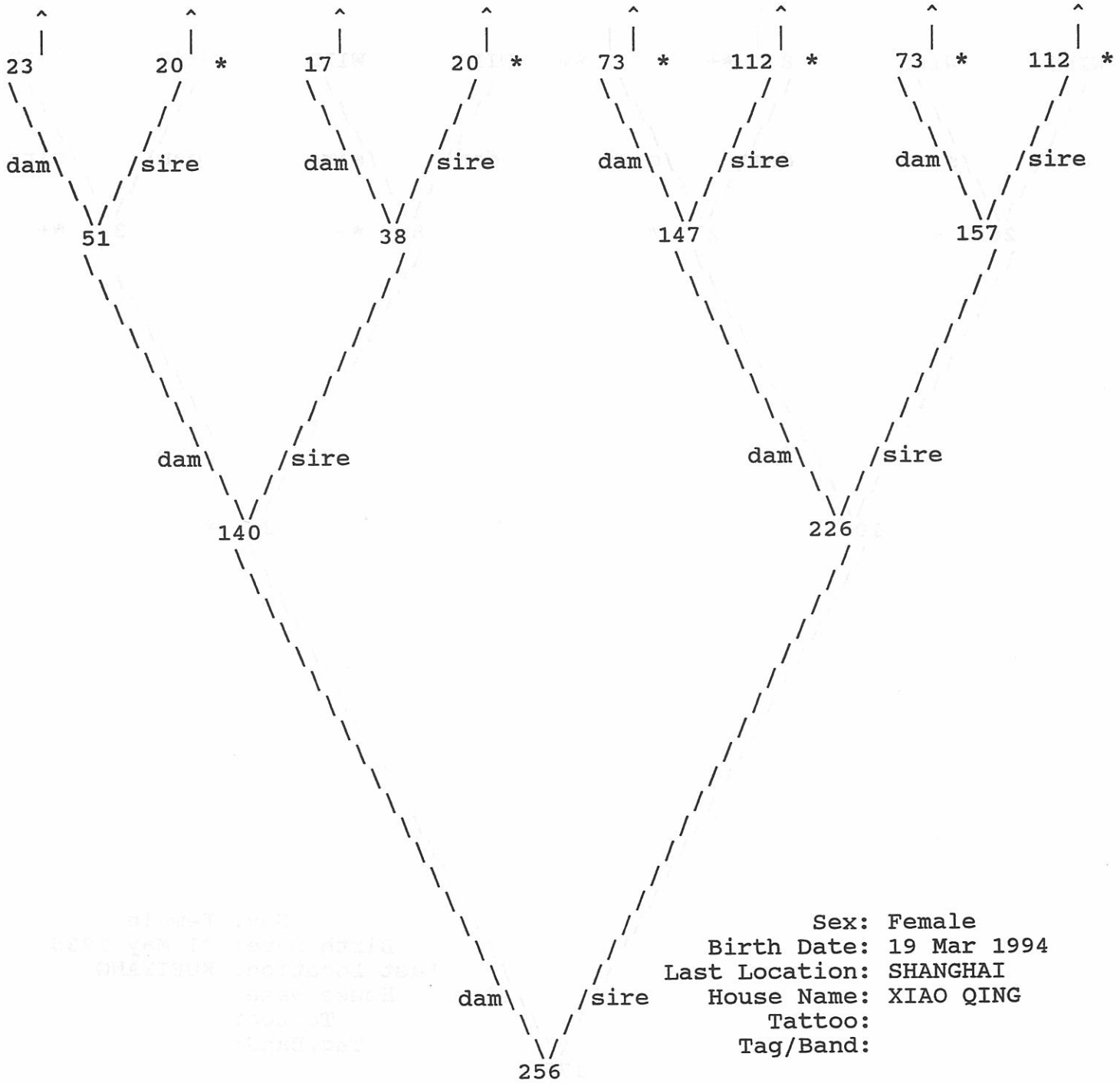
Sibling Report
SOUTH CHINA TIGER Studbook

Taxon Name: **PANTHERA TIGRIS AMOYENSIS** Studbook Number: **236**

249	69	140	21/06/1992	Male
250	69	140	21/06/1992	Male

Pedigree Chart Report
SOUTH CHINA TIGER Studbook

axon Name: **PANTHERA TIGRIS AMOYENSIS** Studbook Number: **256**

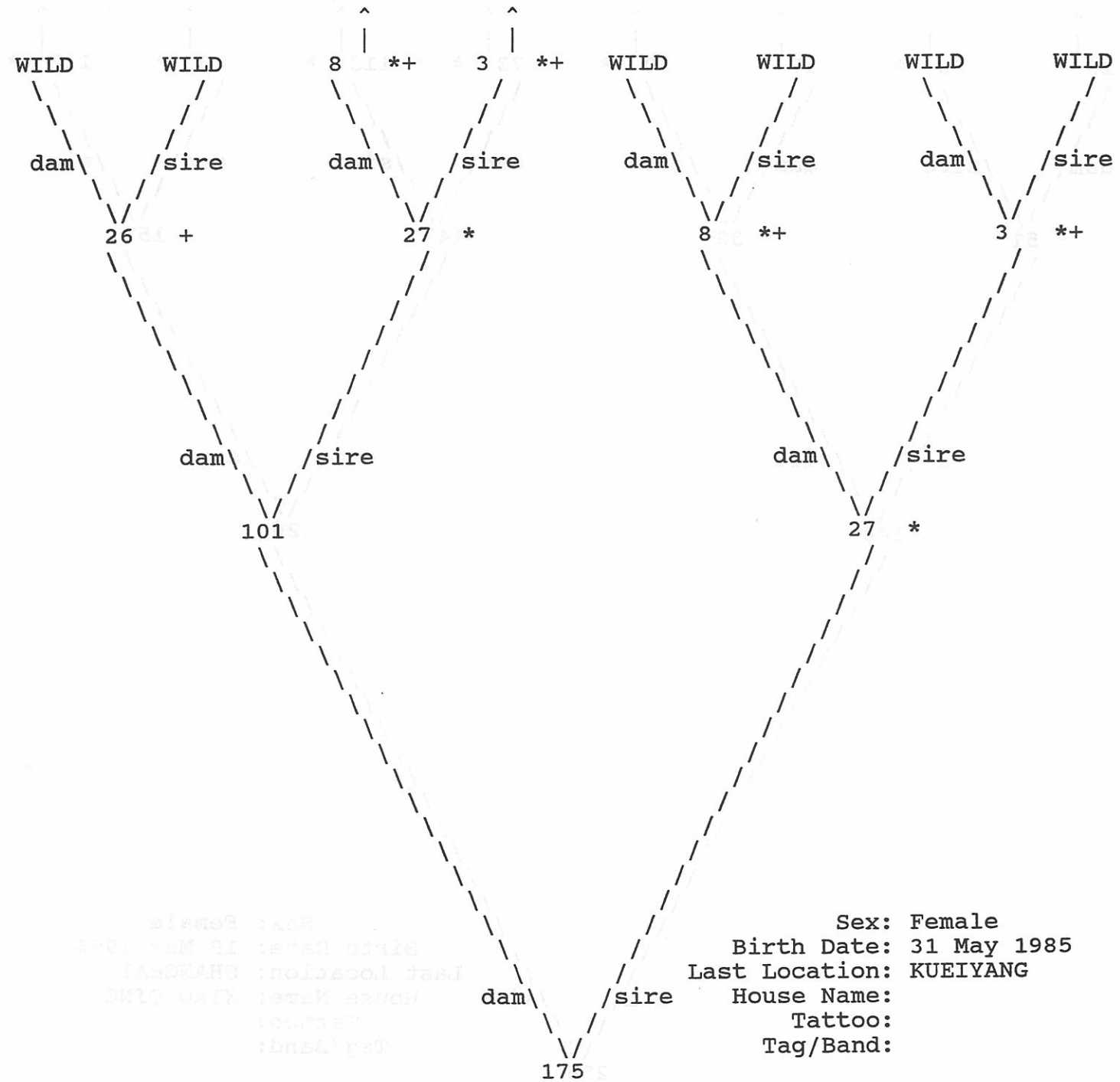


Sex: Female
Birth Date: 19 Mar 1994
Last Location: SHANGHAI
House Name: XIAO QING
Tattoo:
Tag/Band:

* Studbook ID's appearing more than once...
^ Pedigree Chart continues beyond top of page...

Pedigree Chart Report
SOUTH CHINA TIGER Studbook

Taxon Name: **PANTHERA TIGRIS AMOYENSIS** Studbook Number: **175**



Sex: Female
Birth Date: 31 May 1985
Last Location: KUEIYANG
House Name:
Tattoo:
Tag/Band:

\+ Specimens known to be obtained from the wild...
* Studbook ID's appearing more than once...
^ Pedigree Chart continues beyond top of page...

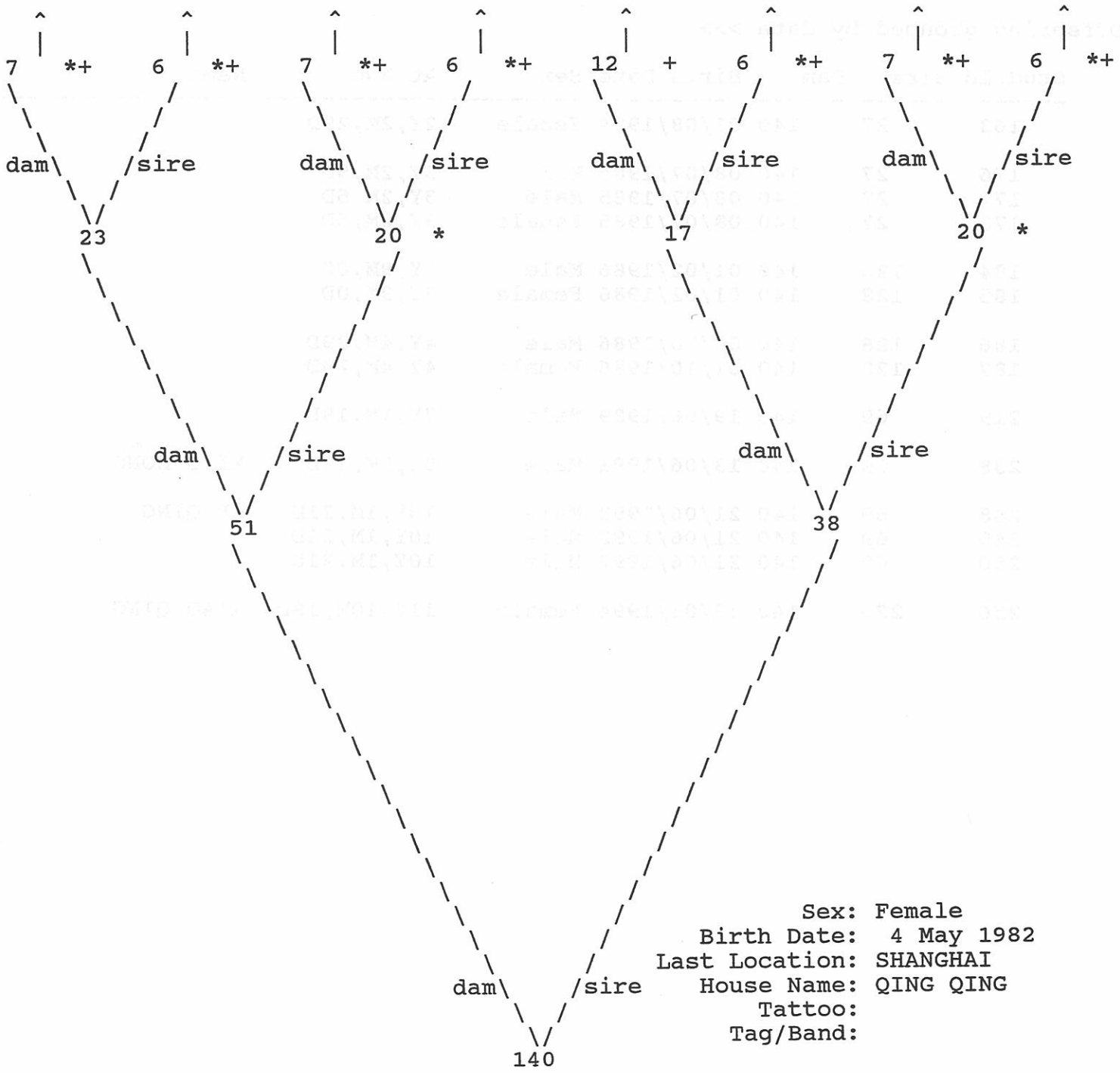
Compiled by: Li Yinghong, Chongqing Zoo thru Captive Breeding Specialist Group
Data current thru: 28 Apr 1995

SPARKS v1.3
2 May 1995

Pedigree Chart Report
SOUTH CHINA TIGER Studbook

axon Name: **PANTHERA TIGRIS AMOYENSIS**

Studbook Number: **140**



Sex: Female
Birth Date: 4 May 1982
Last Location: SHANGHAI
House Name: QING QING
Tattoo:
Tag/Band:

+ Specimens known to be obtained from the wild...
* Studbook ID's appearing more than once...
^ Pedigree Chart continues beyond top of page...

Compiled by: Li Yinghong, Chongqing Zoo thru Captive Breeding Specialist Group
Data current thru: 28 Apr 1995

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2 May 1995

Reproductive History Table
SOUTH CHINA TIGER Studbook

Taxon Name: **PANTHERA TIGRIS AMOYENSIS** Studbook Number: **140**

Offspring grouped by date >>>

Stud.Id	Sire	Dam	Birth Date	Sex	At Age	Name
163	27	140	01/08/1984	Female	2Y,2M,29D	
176	27	140	08/07/1985	Male	3Y,2M,5D	
177	27	140	08/07/1985	Male	3Y,2M,5D	
178	27	140	08/07/1985	Female	3Y,2M,5D	
184	128	140	01/02/1986	Male	3Y,9M,0D	
185	128	140	01/02/1986	Female	3Y,9M,0D	
186	128	140	01/10/1986	Male	4Y,4M,29D	
187	128	140	01/10/1986	Female	4Y,4M,29D	
219	69	140	19/06/1989	Male	7Y,1M,18D	
238	69	140	13/06/1991	Male	9Y,1M,12D	XIAO HONG
248	69	140	21/06/1992	Male	10Y,1M,21D	HE QING
249	69	140	21/06/1992	Male	10Y,1M,21D	
250	69	140	21/06/1992	Male	10Y,1M,21D	
256	226	140	19/03/1994	Female	11Y,10M,18D	XIAO QING

Zoo Evaluation and Workshop Agendas

17 April	South China Tiger Team (R. Tilson, K. Traylor-Holzer, J. Manansang) arrive at Guangzhou via train from Hong Kong
18 April	Evaluation of tiger facilities, management and records at Guangzhou Zoo (5 tigers)
19 April	Tiger Team travels to Chongqing
20 April	Evaluation of tiger facilities, management and records at Chongqing Zoo (3 tigers); studbook evaluation
21 April	Tiger Team travels to Shanghai
22 April	Evaluation of tiger facilities, management and records at Shanghai Zoo (9 tigers); U. Seal arrives in Shanghai
23 April	Tiger Team travels to Suzhou; evaluation of tiger facilities, management and records at Suzhou Zoo (9 tigers); workshop preparation
24-27 April	South China Tiger Masterplan Workshop, Suzhou

Workshop Agenda

Monday, 24 April

AM Opening addresses by Wang Menghu (CAZG), Feng Da Jiang (Suzhou Municipal Government), Wang Binglou (Ministry of Construction), Chen Baishou (Suzhou Gardening Bureau), Ulysses Seal (CBSG), and Ronald Tilson (CBSG)
Presentations of tiger programs at Chinese zoos

PM Overview of CBSG organization and programs
Overview of Indonesian PKBSI Sumatran Tiger Program
Report of CBSG Team visit to CAZG zoos
Masterplan process: Establish working groups
1) Husbandry and managements issues
2) Animal identification, records and training needs
3) Verification of studbook data

Tuesday, 25 April

AM Working group sessions (Groups 1 & 3)

PM Working groups continue (Groups 1, 2 & 3)
Working group reports and discussion

Wednesday, 26 April

AM Program goals and management strategies
Demographic and genetic analyses

PM Evidence of inbreeding depression
Management strategies to develop breeding recommendations
Draft masterplan recommendations

Thursday, 27 April

AM Review and edit draft *CAZG South China Tiger Masterplan* and recommendations
Formation of short-term timetable for action
Revision of *CAZG South China Tiger Ex Situ Conservation Plan*
Closing remarks and presentations

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