INTRODUCTION TO AFLORA:
AN ON-LINE DATABASE FOR PLANT UTILIZATION
INFORMATION OF AFRICA

The AFLORA and AFAUNA Committee
The Center for African Area Studies, Kyoto University

1. Significances and functions of AFLORA

More than a quarter of a century has passed since Japanese scientists and anthropologists began their studies on the environment and people of Africa. As these studies advance, a great amount of data from various fields has accumulated. The ethnographical and ethno-scientific studies of plant and animal utilization are certainly such fields in which a large quantity of information has already been gathered and will continue to be accumulated in the future. Unfortunately, however, most of the data concerning the utilization of plants and animals tend to be stored in the file boxes of individual fieldworkers without being published. In such a situation, effective utilization of the data for broad comparative studies is quite difficult. It certainly would require a tremendous effort for all scholars wanting to make some comparisons of their data with those of other people. It is very regrettable and we cannot expect significant advances in the fields of ethno-botany and ethno-zoology if we cannot take measures to cope with this problem. In response to this need, we have decided to create a database system, named AFLORA, to gather and compile this information into one easily accessible system.

AFLORA is going to be constructed on the main computer system (FACOM M-780) at the Data Processing Center of Kyoto University. using a database management system called FAIRS (Facom Advanced Information Retrieval System). AFLORA is expected to be opened to the public in about 3 years.

The development of the computer has made it possible to manage large amounts of information quite easily and effectively: storing great quantities of data, allowing for quick retrieval and useful presentation of it into a variety of required formats. In addition to this data processing. its accessibility is another crucial point in computer system use. You may have access to the whole database at any time as long as the main computer is in service (normally from 9:20 to 22:00), and from any place using terminals. such as personal computers which are connected to the host computer through ordinal phone-lines or computer networks among universities known as the N-1 Network.

The potential value of AFLORA is infinite. It will provide intensive or extensive. fine-grained or macroscopic data from a historical or up-to-date context

quickly. Thousands of records will be stored by the opening of this system, and hundreds or thousands of new records will be added every year, continually improving the quality of the database.

The most important point of a database system, needless to say, is to accumulate as much data as possible from as many related areas as possible. Here we ask for your understanding and collaboration in constructing AFLORA as our common intellectual property. The success of AFLORA definitely depends on all those who have been, are, and will be doing fieldwork in Africa. This resource is not limited to Japanese Africanists. We announce this project broadly to all those who have special concerns for the African continent, and we ask for their contribution to AFLORA as well.

Contributors to AFLORA will be kept informed about the progress of the project through 'AFLORA INFORMATION', which will be kept up-to-date by the Center for African Area Studies (CAAS), Kyoto University.

2. Structure of AFLORA

AFLORA consists of two sub-files: the first sub-file (PLANT1) stores data collected and presented directly to AFLORA by individual contributors, and the second sub-file (PLANT2) contains data taken from published sources. We start by constructing the sub-file 1, then sub-file 2 when we get permission to use data from published literatures. Along with AFLORA, we will proceed with the construction of AFAUNA, an ethno-zoological database for animal utilization in Africa.

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        Plant utilization information:
            AFLORA— PLANT1 (data collected by individuals)
                  — PLANT2 (data from publsihed sources)
        Animal utilization information:
            AFAUNA—ANIMAL1 (data collected by individuals)
                  — ANIMAL2 (data from published sources)
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The procedures for the construction of the sub-file PLANT1 are as follows:

1) Each contributor arranges information on the plants he collects in his study site. Information on one plant species by each contributor makes one PLANT1 record, each record containing 29 items of information (see, Appendix 1). The records should be offered to the AFLORA and AFAUNA Committee (AFCOM) at the CAAS, in the form of type-written documents on AFLORA Data-sheets (see, Appendix 2) or in the form of a computer-readable MS-DOS text file on magnetic floppy disks for personal computers.

2) Upon receiving the data, AFCOM rearranges the data so as to be suitable for machine input, giving a unique identification number to each record. Then they are put into the sub-file PLANT1 of AFLORA in the FAIRS database system of the Data Processing Center of Kyoto University.

It is not necessary to offer all one's data at once. Addition of new records to AFLORA and correction of old records are possible at any time.

3. Access to AFLORA

To use AFLORA, it is necessary to be registered at the Data Processing Center of Kyoto University and to receive your 'user's ID' which is requested when you log-on at the mainframe. If you want to have access to AFLORA from the terminal of a university data processing center other than Kyoto University, you also need to register yourself at that data processing center.

There are various ways to have access to AFLORA depending on where you are. If you are in the Data Processing Center of Kyoto University, you can have access to AFLORA directly. When you are in the Data Processing Center of other universities, you have to connect your terminal at the center to AFLORA through the computer network among universities known as the N-1 Network. When you are away from university data processing centers, you can also connect your terminal (most small personal computers serve this purpose) to AFLORA through ordinal phone-lines. Access to AFLORA is also possible through international telephone lines (Fig. 1).

4. How to use AFLORA

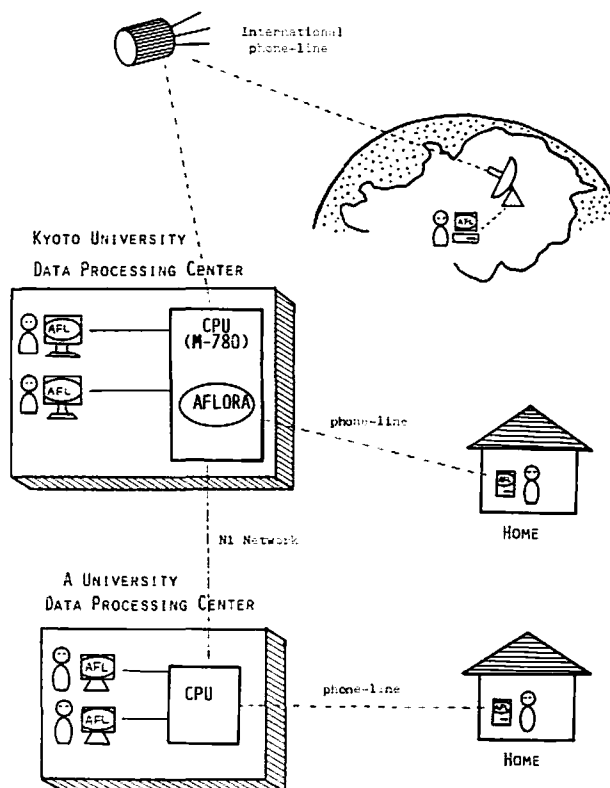FAIRS is a database management system that operates in the interactive mode as

Fig. 1. Access to AFLORA.

well as in the batch mode. For usual information retrieval, the interactive mode is more convenient. The procedure of information retrieval is quite easy, not requiring any special knowledge of computer systems. Using such simple commands as 'search', 'and', 'or', 'not', you can easily get to the information you want. By simply entering the command 'output', you have access to the results on monitor or in printed form (AFLORA PLANT1 only).

Here is an example of how to get information on the Euphorbiaceae plants used for medical treatments in the Ituri Forest of Zaire. This is done in the interactive mode. The user enters a command after the 'RS>' prompt of FAIRS. Italicized are the commands entered by the user.

RS> *SELECT AFLORA*	[selection of AFLORA database]
RS> *SEARCH AREA = ITURI*	[restriction of the area]
281 RECORD(S) FOUND	[reply of AFLORA]
RS> *AND FAMILY = EUPHORBIACEAE*	[restriction of the family]
13 RECORD(S) FOUND	[reply of AFLORA]
RS> *AND UT = A?*	[restriction of the use type ('A?' stands for medical uses)]
7 RECORD(S) FOUND	[reply of AFLORA]
RS> *OUTPUT REC(1) ELEMENT(ALL)*	[output of the first record with all data fields]

No. 1
KEY-NUMBER   P1000001
ID-NUMBER   ADR0001
SPECIES   Bridelia micrantha (HOCHST.) BAILL.
FAMILY   EUPHORBIACEAE
COLLECT-DATE   1985.08.27
COLLECTOR   ICHIKAWA, M.; TERASHIMA, H.; SAWADA, M.
AREA   C, ZAIRE, ITURI, LF
LOCATION   around ANDIRI, 20 km NE of NDUYE (ca. N2, E29), SOUS REGION ITURI, REGION HAUT-ZAIRE.
SPECIMEN-INF   MUSEE ROYAL DE L'AFRIQUE CENTRAL, TERVU-REN, BELGIQUE, No. 45223
IDENTIFIER   DECHAMPS, R. (M. R. A. C., TERVUREN, BELGIQUE)
LIFE-FORM   medium tree
ENVIRONMENT   secondary forest
FREQUENCY   common
ETHNIC-GROUP   BALESE, EFE
VERNACULAR   munjaku (001, BALESE); muzau (001, EFE)
ETYMOLOGY   The name derives from the silkworms called <munjaku> which live on the tree.
USE-TYPE   A6 H3

USAGE	(A6) A bark decoction is drunk for sore-throat <kumbu-kumbu> or for cough <timba> : (IFM2).
	(H3) The tree is a chief plant and host of a kind of wild silk-worm named <munjaku>, Anaphe sp.: some hundred worms make the cocoons in a united mass in September and October; they are eaten roasted: (OBS1).
INFORMANT	LINGATA (30S, M, BALESE); LINGATA, E. (30S, M. BALESE); UKUKIDA (30S, M. EFE): MOIYAMBA (20S, M, EFE)
REFERENCE	UPWTA1:138; FCRB, 8:49
REMARK	The silkworm is Anaphe sp. (FCRB, 8:49); maybe Anaphe infracta (UPWTA1:138).
RECORD-AUTHOR	TERASHIMA, H.: ICHIKAWA, M; SAWADA. M.
REGISTERED-DT	1987.12.15
RS> END	[close of the session]

More complex and sophisticated data retrieving is also possible with little difficulty using various functions of the FAIRS data retrieval system. Later we will prepare a practical guide to the data retrieving system of AFLORA, and users will be asked to refer to it.

≪ The restrictions of the use of AFLORA data ≫

All data from AFLORA is to be used for academic purposes only, and commercial use is strictly prohibited. Users should be careful with the data taken from published sources which are stored in the sub-file of PLANT2. so as not to infringe upon the copyrights of the original authors and publishers. In general, only visual reference will be allowed to users, and the printing of such data is prohibited in any form. As for the data of PLANT1, its utilization and output of the results will be allowed as long as it is for academic purposes. This, however, excludes the output of data in the form of machine-readable files or the subsequent utilization of those files for printing. When such a necessity arises, permission must be obtained from the AFLORA and AFAUNA Committee beforehand. Users are also requested to mention the use of AFLORA in all works done using AFLORA, and a copy of the work should be offered to the AFLORA and AFAUNA Committee of the Center for African Area Studies and the Data Processing Center of Kyoto University, respectively.

N   : North Africa
NE   : North-East Africa
E   : East Africa
SE   : South-East Africa
W   : West Africa
C   : Central Africa
S   : Southern Africa
I   : Indian Ocean Islands

Fig. 2a. Classification of region.

* * ⟨Typical vegetation⟩
MT : Mountainous vegetation zone
LF : Lowland forest vegetation zone
MS : Moist savanna vegetation zone
WL : Woodland vegetation zone
DS : Drier savanna, bush and thicket vegetation zone
SD : Semi-desert vegetation zone
DT : Desert zone
MD : Mediterranean vegetation zone
MG : Malagasy vegetation zone

(Classification is made after the following Figure, adding DT and MD.)

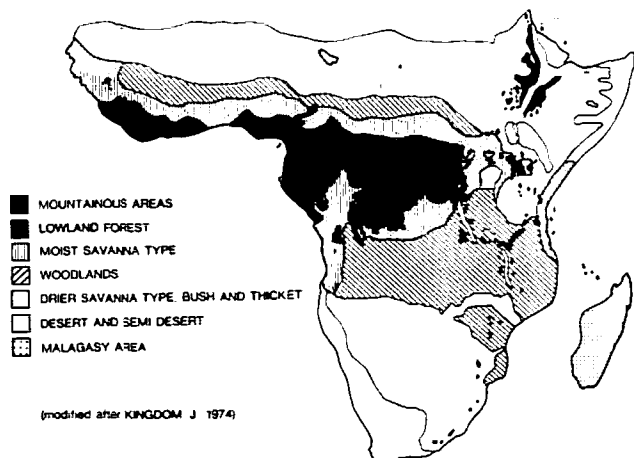■ MOUNTAINOUS AREAS
■ LOWLAND FOREST
▥ MOIST SAVANNA TYPE
▨ WOODLANDS
☐ DRIER SAVANNA TYPE. BUSH AND THICKET
☐ DESERT AND SEMI DESERT
▦ MALAGASY AREA

(modified after KINGDOM J 1974)

Fig. 2b. Classification of typical
          vegetation.

Appendix 1. Format of AFLORA data records.
Each record has following items.

Item	Contents	Name, Alias name
1. Record key	All records bear serial numbers given by AFCOM	KEY–NUMBER, KY
2. ID number	Numbers given by each offerer of the data	ID–NUMBER, ID
3. Species name		SPECIES, SP
4. Family name		FAMILY, FM
5. Common name	English, French, Kiswahili, etc.	COMMON–NAME, CN
6. Date of specimen collection		COLLECT–DATA, CD
7. Collector(s)		COLLECTOR, CR
8. Area information	Region*, nation, area in the nation (Province, District, etc.), and typical vegetation** (for * and **, see Figs. 2a and 2b.)	AREA, AR
9. Location	Detailed information on the collection area, including latitude, longitude, altitude.	LOCATION, LC
10. Specimen information	Institutions where specimen is kept, number of specimen, state of specimen (sterile or not, etc.)	SPECIMEN–INFO, SI
11. Identification	The one who identified the specimen, his / her affiliation.	IDENTIFIER, IC
12. Life form	(tall tree, ca. 30 m in height /shrub / herbaceous vine / fern / grass / etc.)	LIFE–FORM, LF
13. Environment	micro habitat (e.g., wet place near water / secondary forest / etc.)	ENVIRONMENT, EV
14. Frequency		FREQUENCY, FQ
15. Other botanical information	Especially for unidentified specimens (e.g., leaf is dark green, oval, with sharp point, smooth, not shiny, under-side slightly paler, etc.)	BOTANICAL–INF, BI
16. Ethnic group		ETHNIC–GROUP, EG
17. Vernacular		VERNACULAR, VN
18. Etymology		ETYMOLOGY, EM
19. Usage type	Usage and used part(s) by abbreviation(s) as classified below (A1, B5, etc.).	USE–TYPE, UT

[Classification of usage]	[Classification of used parts]
A: medical use.	0: whole, not specified.
B: food, drink.	1: fruit, berry, seed, nut.
C: material culture.	2: flower, flower bud.
D: magico-religious and ritual use.	3: leaf.
E: poison.	4: herbaceous stem.
F: narcotics, seasoning.	5: root, tuber.
G: song, oral tradition, saying, indicator.	6: bark, skin.
H: indirect use.	7: vine.
I: used by wild animals.	8: sap, resin, gum.
J: others.	9: trunk, branch, wood, pith.
	X: others.

20. Usages	Details of usage in the form of text.	USAGE, US
21. Informant(s)	Name, age, sex, ethnic group.	INFORMANT, IF
22. Chemical substances		CHEMICAL–SBST, CS
23. Figures		FIGURE, FG
24. References		REFERENCE, RF
25. Remarks		REMARK, RM
26. Recorded by...		RECORD–AUTHOR, AU
27. Date of registration		REGISTERED–DT, RD
28. Last update date		UPDATE–DATE, UD
29. Keywords		KEYWORDS, KW

Appendix 2. AFLORA data-sheet.

ＡＦＬＯＲＡデータシート

レコード作成者 Recorder	
レコード記入日 Date	

採集者レコード番号 ID Number	
種名 Species	
科名 Family	
一般名 Common name	
標本採集年月日 Collection date	
標本採集者・データ収集者 Collector	
地域情報 Area	
採集地 Location	
標本所在地・番号・状態など Specimen	
同定者・所属 Identification	
植物の形状 Life form	
生息環境 Environment	
頻度 Frequency	
その他の植物学的情報 Botanical information	
化学成分 Chemical substance	
文献 Reference	

民族 Ethnic group	
方名・民族 Vernacular/Ethnic group	
方名の由来 Etymology	
インフォーマント Informant	
用途分類 Use type	
用途 Usage	
註 Remark	