

The UVIMA Project

Uchambuzi wa Viumbe kwa Maendeleo Taxonomy for Development in East Africa

UVIMA Baseline Review Consultancy
Draft Report

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Countries Covered by Project:	United Republic of Tanzania
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Report prepared for the UVIMA- The BioNET-EAFRINET Project

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Guiding notes: ToRs

- 1. Prepare the tools/methodologies for the review and discuss them with Project Team.*
- 2. Document institutions, projects, experts, initiatives, programmes and databases involved in curation, management and use of IAS/pests/pollinators at national level in Kenya, Uganda and Tanzania; indicate the current status of the collections, their digitisation and associated databases and determine future prospects for growth and use.*
- 3. Document the expertise available and make recommendations on capacity needs at national level.*
- 4. Identify potential partners, collaborations and linkages regionally and internationally relevant to the UVIMA project working on IAS /pests/pollinators.*
- 5. Identify the gaps in handling IAS /pests/pollinators issues and provide recommendations as to how the UVIMA project can contribute to bridging the gaps.*
- 6. Document current institutional mandates and sources of funding available, additional opportunities and potential for new funding and strategic partnerships to enhance effective delivery of the broader goals and objectives of the UVIMA project.*
- 7. Document and address any other pertinent issues not outlined above, in the broader context of and relevant to the UVIMA project concerning baseline review for IAS /pests/pollinators at national level.*

1. Executive Summary

(To be completed and included after compilation of all Team inputs...)

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1.1 Key project achievements during the reporting period

(To be completed: Will be reported in form of outputs. Observing maximum of 30 words)

#	Key Consultancy Achievements
1	Tanzania has X projects dealing with various pests, pollinators and IAS (See list of projects in Annex 2). However, these are fragmented and operate in isolation. List of these <i>fauna and flora</i> is presented in Annex 3
2	Survey of on-going pollinators-related project: The main project activities related to pollinators include beekeeping that has been highly practiced in both the deep fertile area and coral rags marginal soils. Concern that bee ticks exist in Zanzibar has been raised. It is necessary to verify this information as soon as possible to avoid adverse effect on the existing honey bees. Some published and unpublished information exist on the butterflies of Kiwengwa, Jozani and recently West zone of Unguja islands.

3	Survey of on-going projects related to invasive species: Only two activities relating to invasive species were documented during the survey namely, the control of seaweeds at Chumbe Marine Conservation Area and of <i>Maesopsis eminii</i> at Ngezi Nature Reserves of Pemba. While the control at Chumbe seems to yield good results, at Ngezi the control is still under observation and the right approach is yet to be realized.
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2.1 Tools/methodologies used in the review

An assortment of tools and methods were used in the baseline survey depending on the data and information being sought. Methods included meetings, verbal discussions, face-to-face interviews, telephone conversations etc. Tools used were questionnaires, photographs, available literature etc. The approach took into consideration the followings:

- Local traditional knowledge available in the areas;
- participation by the different stakeholders including local communities to ensure ownership;
- Involvement of the various institutions that address, at all levels, the management of pests, invasive species and pollinators in various relevant institutions both in Zanzibar and Tanzania mainland;
- Review of already published materials;
- Demonstrated by pin-pointing the actual farmer and/or an industry involved. For instance, the features the farmers use to identify the invasive species;
- Integration of farmers’ knowledge, two way interaction with the farmers (first asking the farmers then learning from them)
- Telephone conversations with key personnel
- Tapping on experience from previous research work with partners and farming communities
- Verbal discussions with colleague scientists, specialists and friends etc.

2.2 Existing Resources

(Institutional and personnel documented) in each case defining. Please fill-in the following table: Make sure the information give covers the whole country

CATEGORY	What the resource is	Where it is developed	Where it is maintained	Where it is Disseminated (or not)	Why developed	Target audience	How - approach/method/design/platform

Collections and Databases							
Collections and Databases	Database of academic and marine research in the East Africa	Western Indian Ocean Marine Science Association (WIOMSA)	WIOMSA	National and regional marine and aquatic scientists and other researchers	Forum for exchange of data and information	Students, researchers and faculty staff	Institutional capacity, On-going research projects and programmes, funding etc
	Preserved insect specimens, Pressed plants, Lists of identified pests, botanicals and weeds	ARI Uyole	ARI Uyole labs	ARI Uyole, Farmers and extension agents in southern highlands (SH), Policy makers	To facilitate and enhance pest management	Scientists, Farmers, Extension agents, Policy makers, Donor agents	Field days, Visits, Training seminars and workshops, Agric shows
	Preserved specimens of insect, rodents, birds pests. Pressed plants, Lists of identified pests, botanicals and weeds	Tropical Pesticides Research Institute (TPRI)	National Herbarium of Tanzania, Insect reference collection and laboratories	Nation wide to farmers, policy markers, academic and research institutions, students	Facilitate and enhance pest management nationally. For identification , teaching creation of reference materials	Scientists, Farmers, Extension agents, Policy makers, Donor agents	Dry specimens preserved in collection boxes and cupboards, wet specimens in preservation bottles.

	Preserved specimens of insect, rodents, Pressed plants, Lists of identified pests, botanicals and weeds	Sokoine University of Agriculture (SUA)	SUA pest management centre, Department of Crop Science Production Laboratory	Training for farmers, Secondary schools (A & O level). Reference collections for researchers. Inspectors from the Ministry of agriculture	For identification , reference purposes and training and education.	Students, researchers and farmers	Pinned specimens in drawers and wet specimens in vials stored in cupboards
Computer hardware, software and accessories and communication	Computers, net work and their accessories	Manufactured abroad and assembled locally	WIOMSA	System generally accessible to all regional nations in established Institutions	Enhance access of data, information and services	Entire staffs in the units	Excel data sheets and ms word files
Computer hardware, software and accessories and communication	Computers	Manufactured abroad and assembled locally	SUA	For research, training and extension	Enhance access of data, information and services	Researchers, lecturers and students	
	Identification keys	Various	SUA	For research and training	Enhance access of data, information and services	Researchers, lecturers and students	
	Computers	Manufactured abroad and assembled locally	TPRI	For research, training and extension	Enhance access of data, information	Researchers, farmers, extension officers and	

					and services to farmers, researchers, academicians	students	
	Identification keys	TPRI/Various	TPRI	For research, training and extension work	Enhance access of data, information and services	Researchers, farmers, students and others	
	Internet and website	Various	TPRI/SUA	For sharing of information	Enhance access of data, information and services	Researchers, farmers, students and others	
	Internet connectivity	Abroad	At institutions by local experts	To different area, but mainly accessible in towns, hotels and tourist area. However, nowadays, wireless and data cards modems are available that provide access to Internet even in the remote country side	To provide access of information and improve communication	All staff in the institutions	Wireless and potable data cards internet

	Internet and website	Various	TPRI/SUA	For sharing of information	Enhance access of data, information and services	Researchers, farmers, students and others	
CATEGORY	What the resource is	Where it is developed	Where it is maintained	Where it is Disseminated (or not)	Why developed	Target audience	How - approach/method/design/platform

	Internet and website	Morogoro but in process of establishing regional centre in Mwanza	TTSA, Morogoro	For sharing of information national, international	Enhance access of data, information and services	Researchers, farmers, students, policy makers and others	Packed in hard papers and placed in cold storage at TPRI
	Library facilities - two mini libraries	These are developed in project area at DCCFF and PPD	They are maintained by local staff with no formal librarian skills	Libraries provide services to various stakeholders including students, researchers local and foreign	Developed as reference area and info and data centres for different stakeholders	Used by Department staffs, visitors and community members	Specially reserve sections and normal categories where readers can borrow for a limited time.
	Library facilities – a major national library	Well developed national Agricultural Library at SUA, Morogoro with state of the art facilities including CD ROMS, electronic cataloguing system, journals, Books, internet search engines	They are maintained by highly skilled and trained staff both national and international	Library provides services to various stakeholders including students, researchers, academicians and farmers	Developed as reference area and info and data centres for different stakeholders	Used by Department staffs, visitors and community members	Specially reserve sections and normal categories where readers can borrow for a limited time.

	Transport - vehicle -Animal cart	-Developed abroad -Developed locally in the area	Maintained locally	Disseminated to various working station especially in rural areas	Developed to ease the transportatio n of personnel and materials	All stake holders	
Secondary e.g. keys, literature, publications and tertiary	Identification Keys for insect	Few keys developed locally; most developed within the region or abroad	Archived in library, web sites and office shelves	Disseminated to relevant Ministry, University and working stations	Reference materials, baseline information and student theses in the form of Technical reports, published work, reports to superior etc	Staff, visiting researchers, students etc	Fields survey and inventory
	Literature and publications	Literature and publications developed both locally and internationally		Disseminated to the Ministry, University and working stations		Staff, visiting researchers, students etc	
	Identification guides, Field reports, Printed	ARI Uyole	ARI Uyole library	ARI Uyole, Scientists (in SH, SUA, MAFS,	To facilitate research in crop and animal	Scientists, farming communities	Training seminars and workshops, visits, shows,

	booklets			Students), Farmers and extension agents	production	, Students	postage
Communication resources	Mobile telephones Land line telephone	Abroad	Local phone shops	Country wide	To ease the communication	All people	Exhibition, Publication, Radio broadcasting etc
	Internet	Abroad	Local workshops	In town area, tourist area and all sites where mobile telephone services available In Urban and rural areas	To ease communication	All people	Exhibition, Publications, Radio broadcasting etc
	Radio calls	Abroad	Local workshops	country wide	To ease the communication		Exhibition, Publication, Radio broadcasting etc

	Radio and TV	Jointly by local and external experts	Jointly by local and external experts	Cover specified locality and some time country wide	To ease communication and information sharing	Mainly operational in project areas and companies. covers all people, various age classes, sex and special sections of community/ whole community	Exhibition, Publication, Radio broadcasting etc
	Promotional materials	Developed both locally and abroad	Normally maintained in the area of specialisation in the country		Promotes awareness/ understanding		Posters, brochures, T-shirts, calendars etc
	Human resources	International, regional and local training institutions	International, regional and local training institutions	All of the countries	To provide good services and products	Qualified people with some / specific background knowledge or experiences	Interview, short and long term trainings, workshops etc
	Telephone, E-mail, mail box	ARI Uyole	ARI Uyole	Scientific and farming communities, policy makers,	To facilitate communication with outsiders	Farmers, local farming communities, partners	Phone calls, e-mailing, document postage

				donor agents			
Other Resources	Scientists, Technicians, Laboratories and utilities, Experimental fields, Computers	ARI Uyole	ARI Uyole	Southern highlands, MAFS, Universities,	To facilitate research and extension	Farming communities, extension agents, policy makers, Students	Training courses, workshops, field days and visits

Above table will be updated

3. Status of infrastructure for developing the resources

CATEGORY	Institutions Responsible	STATUS	PROGRESS	ISSUES
	(List all institutions you have come across in your country, including addresses, telephones and contact person(s))	Rank from 0-10 where 0 = not available and 10 = in good/excellent condition Proposed ranking: poor (1-2) fair (3-4) good (5-6) very good (7-8) excellent (9-10) Circulate examples of the criteria. Proposed criteria are: <i>Internet availability, library or document centre (that effectively serves the</i>	Description of work undertaken to improve the resource	Description of problems encountered; Issues that need to be addressed; Decisions / Actions that can be taken

		<i>immediate community), communication lines (phone), linkage with other institutions (national, regional & international), running programmes, laboratory, identification facilities and tool and products, collaborative projects</i>		
Collections and Databases	National Herbarium of Tanzania (TPRI)	8	On-going regional projects and collection of important national plant specimens. modern facilities for taxonomic work Existing linkage with national, regional and international institutions	Prohibitive costs of transport for collection missions Limited capacity for taxonomic work. Particularly in taxonomists
	Insect Reference Collection (TPRI)	6	Specimens from different projects have been compiled. Some modern facilities have been acquired such as storage boxes, dissecting microscopes with camera Lucida	Limited modern facilities for identification, preservation and storage Limited capacity for taxonomic work. Particularly in taxonomists
	National Plant Genetic Resource Centre (TPRI)	8	Well equipped most necessary preservation and storage facilities Various on-going projects aimed at collecting seeds of	Limited capacity for taxonomic work. Particularly in taxonomists Limited space for ex-situ conservation due to inadequate land space

			<p>different indigenous crops and trees</p> <p>Existing linkage with national, regional and international institutions</p>	
	Rodents and Birds Pests Collection (TPRI)	4	<p>Available specimens from different projects and collectors</p> <p>Well preserved specimens</p>	<p>Lack of space allocation within the laboratory, therefore the collection is too scattered and needs to be centralized for better management</p> <p>Limited space for ex-situ conservation due to inadequate land space</p>
	Sokoine University of Agriculture (SUA)	8	<p>Construction of the zoology laboratory under the Faculty of forestry, nature and conservation</p> <p>Rehabilitation of the labs and cupboard in the Department of crop science and production (DCSP)</p> <p>Rehabilitation and expansion of rodents museum at the SUA pest management Centre</p> <p>Establishment of molecular laboratory in the DCSP</p> <p>Existing linkage with national, regional and</p>	<p>Limited funding for collection, preservation and storage of specimens</p> <p>Limited space</p> <p>Lack of supporting staff with taxonomic background and skills</p> <p>Inadequate rapid diagnostic tools such as such as molecular diagnostic tools</p>

CATEGORY	Institutions Responsible (List all institutions you have come across in your country, including addresses, telephones and contact person(s))	STATUS Rank from 0-10 where 0 = not available and 10 = in good/excellent condition	PROGRESS Description of work undertaken to improve the resource	ISSUES Description of problems encountered; Issues that need to be addressed; Decisions / Actions that can be taken
			international institutions	
	University of Dar es Salaam (UDSM) Departments of Botany and Zoology	5	Storage facilities for microbial cultures Well trained and skilled personnel Running academic programmes on microorganisms and related subjects Existing linkage with national, regional and international institutions	Few and outdated equipment and tools Prohibitive cost for maintaining the existing tools and equipments Limited space and innadequate well trained technicians Bureaucratic bottlenecks impede effective and efficient procurement of reagents and other consumables
	Department of Commercial Crops Fruits and Forestry (DCCFF)	4	On-going community forest monitoring, Indians house crow survey, fruits flies control, beekeeping activities and support butterflies community	The activities conducted lack proper coordination and resources. It is important to improve the resources base and harmonise the tasks to deliver the quality outputs. Reporting system needs to be streamlined and data base

			farm and mangroves pests control at Micheweni, Pemba	improved
	Plant Protection Division (PPD)	4	Fruits flies control, insect pest control and monitoring in agricultural crops farm and control of cassava weaver, black sigatoka etc,	The activities conducted lack coordination with other institutions such as DCCFF do similar activities, inadequate resources and poor management of data and information. It is important to improve current data bank and to coordination effectively with other stakeholders
	Society for Natural Resources Conservation and Development (SONARECOD)	2	Supports beekeeping activities at Unguja Ukuu, south Unguja, conduct study on Non-wood forest products, mangroves resources etc	Similar to many other NGOs SONARECOD lacks proper coordination and resources. Has low profile data base that need to be strengthened
	Chumbe Marine Park	6	Train students on marine and terrestrial resources management through field excursion, conduct periodic eradication of invasive sea weeds in the area, Conduct the translocation of Suni antelopes from the main island to Chumbe and monitor their performance through special camera and conduct research on	The centre is isolated and not accessible all the time, lack proper coordination and lack qualified personnel for the taxonomic information management.

			various marine and terrestrial resources.	
	Department of Disaster Prevention in the Office of the Chief Minister of Zanzibar	3	Support the control of Avian and human influenza (trans-boundary diseases) awareness campaign)	Institution is new and lacks resources and personnel. Needs to improve her databases and linkage with other institutions.
	Pete Butterflies farming	5	It deals with butterflies farming for exhibition. It supports community in rearing butterflies as alternative income sources. Their future plan is to release the butterflies to the wild to promote the pollinating agencies.	Inadequate resources including space and low technical knowledge of insect rearing and management at large. Need training of personnel and infrastructure development.
	Zanzibar Beekeepers Association (ZABA)	4	It is NGO dealing with promotion of beekeeping for the production of honey and wax. They harmonise market and resources for the beekeepers.	New and rural based NGO. Lacks resources including hardware and soft ware for data management, inadequate skill and knowledge on conservation. It need skills and knowledge and exposures as dominated with local beekeepers
	Kizimbani Research Centre	5	Conduct research, training and disseminate information on various agriculture and biodiversity resources. Reputed to hold the best collection of insect in East	Lacks tools and equipment for research, lacks transport facilities. The data collected need to be transported to head office in town for data management since the centre lack computer services. It need great effort to strength

			Africa; Also provides laboratory services to the whole country.	research activities including field and analytical work as well as reporting and archives
	Agriculture Services Support Project (ASSP)	3	Conduct and support research, trainings and disseminating of information on various agriculture and biodiversity resources.	
	Marine and Coastal Environment Management Project (MACEMP)	4	Strengthen the sustainable management and use of the Exclusive Economic Zone, territorial seas, and coastal resources resulting in enhanced revenue collection, reduced threats to the environment and better livelihoods for participating coastal communities	
	Agricultural Research Institute (ARI) Uyole, Mbeya	4	Continued renewal of preserved specimens and improvement of databases	Shortage of trained and devoted manpower to implement the work, Motivation of personnel to improve morale, Replacement of old and obsolete facilities

CATEGORY	Institutions Responsible (List all institutions you have come across in your country, including addresses, telephones and contact person(s))	STATUS Rank from 0-10 where 0 = not available and 10 = in good/excellent condition	PROGRESS Description of work undertaken to improve the resource	ISSUES Description of problems encountered; Issues that need to be addressed; Decisions / Actions that can be taken
	Tanzania Coffee Research Institute (TaCRI) Moshi	3	Large collection of preserved insects	Obsolete taxonomic infrastructure limited taxonomic capacity non-functional knowledge - apparent disinterest in taxonomy TaCRI is in the process of changing from taxonomic to other interest such as coffee tissue culture
Secondary e.g. keys, literature, publications and tertiary	TPRI	5	Limited electronic taxonomic keys, hard copy dichotomous identification keys	Inadequate taxonomic digital keys and catalogues Inadequate subsidy for taxonomic tools and products
	SUA	5	Available digital keys (2 CD ROMS on taxonomy of Dacina for CABI Keys of various Orders Online resources	Inadequate taxonomic digital keys and catalogues Inadequate subsidy for taxonomic tools and products
	UDSM	4	Taxonomic curricula: On-going academic programmes on taxonomy	Limited facilities, taxonomic tools and products Outdated taxonomic equipment and facilities

	Department of Commercial Crops Fruits and Forestry (DCCFF)	4	Has mini library and technical paper series that was initiated during the FINNIDA Forest Development Projects in 1990s. Has section in the web site for publications produced under the Department in collaboration with its partners	Limited facilities, taxonomic tools and products
	Western Indian Ocean Marine Science Association (WIOMSA)	8	Document centre with electronically archived peer reviewed publications mainly on the marine and coastal environment	Unequal distribution of taxonomic tools in the regional institutions
	Institute of Marine Sciences (IMS) of the Dar es Salaam University	8	Library and documents centre with electronically archived peer reviewed publications mainly on marine and coastal environment	Limited facilities, taxonomic tools and products Outdated taxonomic equipment and facilities
	Plant Protection Division (PPD)	3	Has mini library and established reporting system that was initiated during the Pest Control Danish project in 1990s. It has partnership with ICIPE and exchange information.	

	Society for Natural Resources Conservation and Development (SONARECOD)	1	Single office and 2 computers as working tools and bank for reference materials including research publications	
	Chumbe Marine Park	1	Book shelves for archiving field books of data and information relating to the marine and terrestrial environment. Additionally, reports and publications on research conducted in the area by visiting scientists, collaborators and students	
	Department of Agriculture Research and Extension (DARE)	3	Small document centre that was initiated during the Cash Crops Project in 1990s. Contains technical paper series, some jointly published work.	
	Department of Disaster prevention	1	Scanty report and few publications on shelves	
	Pete Butterflies Farming	1	Shelves with some reports and papers published by students and visiting researchers	
	Zanzibar Beekeepers Association (ZABA)	1	Office contains no Internet, no publications	
	Kizimbani Research Centre	4	Small document centre	

			with various types of literatures and research publications	
	Agriculture Services Support Project (ASSP)	1	Scanty report and few publications on shelves	
	Marine and Coastal Environment Management Project (MACEMP)	1	Scanty report and few publications on shelves	
	ARI Uyole, MAFC	3	Production of new keys, descriptions, reports and publication of new research findings	Limited resources for e-literature search
Communication resources	TPRI	6	Variety communication lines including mobile telephony	
	SUA	6	Variety communication lines including mobile telephony	Not very efficient Regular congestions, outdated network distribution of communication lines
	UDSM	5	Variety communication lines including mobile telephony	Regular congestions, outdated network distribution of communication lines
	Western Indian Ocean Marine Science Association (WIOMSA)	7	Reliable internet connectivity, functional wireless service Variety communication lines including mobile	Regular congestions, outdated network distribution of communication lines

			telephony	
	Department of Commercial Crops Fruits and Forestry (DCCFF)	2	Internet at Head office and one station of Jozani Chwaka Bay National Park. Radio call system linking all station but currently non-functional, It has land line system at Head office and all station including Village Conservation Committees (VCCs) members have mobile telephones.	Regular congestions, outdated network distribution of communication lines
	Plant Protection Division (PPD)	2	Internet at Head Office. Radio call currently out of order. Functioning landline telephone, most staff also reachable via mobile phones	Regular congestions, outdated network distribution of communication lines
	Society for Natural Resources Conservation and Development (SONARECOD)	2	Internet services available via modem; accessible via mobile phone	
	Chumbe Marine Park	5	Internet services available via modem; accessible via radio call and landline telephone	

	Department of Disaster prevention	2	Internet services, landline telephone and mobile telephone	
	Pete Butterflies Farming	1	Internet services, radio call, landline telephone and mobile telephone. Radio and TV services	
	Zanzibar Beekeepers Association (ZABA)	1	No internet. Accessible via mobile phones and personal e-mail address	
	Kizimbani Research Centre	3	Internet services, accessible via landline telephone and mobiles	
	Agriculture Services Support Project (ASSP)	5	Internet services, accessible via landline telephone and mobiles	
	Marine and Coastal Environment Management Project (MACEMP)	6	Internet services, accessible via landline telephone and mobiles. Radio and TV programmes available	
	Participatory Agriculture Development and Empowerment Project (PADEP)	6	Internet services, accessible via landline telephone and mobiles. Radio and TV programmes available	
	TASAF II	3	Internet services, accessible via landline	

			telephone and mobiles.	
	ARI Uyole, Ministry of Agriculture Food and Cooperative (MAFC)	4	Variety communication lines including mobile telephony	Office e-mailing and internet connectivity need improvement for better quick communication
Other resources	ARI Uyole, MAFC	3		Need to train and equip young scientists and technicians to understudy current personnel

4. Documentation of new opportunities where they exist

CATEGORY	Name	Institution	STATUS	Detail
	List all new opportunities you have come across that do not exist in your country) i.e. opportunities that can be tapped. Meaning any opportunity or technology for documenting that you know exists in mainstream science but unavailable locally. E.g. another institution where a new/innovative means such as traditional technology. If unable to rank, just mention them	List all the institutions in your country where this new opportunity is	Rank from 0-10 where 0 = not available and 10 = in good/excellent condition	Details of the institutions including addresses, telephones and contact person(s)
Technologies	Tissue culture and molecular detecting techniques; initial analyses conducted locally and sent to India or Nairobi for	TPRI Mikocheni Agricultural Research Institute	6	Royal Belgian Institute of National History (RBINH)

	subsequent analyses.	(MARI) in Dar, SUA		
	Tissue culture and molecular detecting techniques; initial analyses conducted locally and sent to India for subsequent analyses.	SUA	7	Royal Belgian Institute of National History (RBINH)
	Molecular identification techniques – collaboration with institutions in the Netherlands	UDSM (Dept Molecular Biology)		Katholiek University Nijmegen, Netherlands
	Beekeeping/ traditional hives preparation, rearing of butterflies etc Electronic data base management, identification and naming of different species, developed technology on apiaries Applied techniques in management of invasive species in herbarium and archives management and population/ genetic biology survey techniques	DCCFF, MACEMP, NMK, Livestock development department, PPD, ZALWEDA, SONARECOD, ZAFIDE	4	Ministry of Agriculture, livestock and Environment, P. O. Box 159, Zanzibar. E-mail: kilimo@zanlink.com
	Wide opportunities exist for generating technologies for improved crop and animal production	ARI, Uyole	4	P O Box 400, Mbeya, Tz Mr L Nsemwa Mr D Kabungo
Expertise	Ethno botany, fruit flies, mangroves, livestock pests and diseases	DCCFF, PPD, SMOLE, Livestock development department, ZALWEDA, SONARECOD,	3	Ministry of Agriculture, livestock and Environment, P. O. Box 159, Zanzibar. E-mail: kilimo@zanlink.com

		ZAFIDE		
	Trained scientists in various fields	ARI Uyole	4	P O Box 400, Mbeya, Tz Mr L Nsemwa Mr D Kabungo
	Well trained scientists in various taxonomic disciplines	TPRI	7	Ms N.Molel (TPRI), Dr. Ijani Afihini (TPRI), Mr.t Tomas J. Mbise
	Well trained scientists in various taxonomic disciplines	SUA	7	Dr. M. Mwatawala, Dr. G. Rwegasira
	Existing curricula in various taxonomic disciplines	UDSM, Institute of Marine Sciences	5	Dr. Amelia Buriyo. Dr. Flower Msuya, Mr. George Sangu (sangu34@yahoo.com)
Hardware	Agro processing project, Cassava project, Kizimbani Research stations	DCCFF, PPD, Agricultural Research and Extension, ASSP and Butterflies farm	3	
	Biodiversity Foundattion USA, Botanic Gardens Conservation International(JRS-BGCI), (SECOSUD)	TPRI	7	Mr. Fred Njau, Mr. John Elia
	GIS technology at the Department of Agricultural Engineering	SUA		Dr. Mbilinyi
Software	Tanzania Socio-economic data base, GIS soft ware at SMOLE	DCCFF, Government office of statistics, Livestock development department, ZALWEDA, SONARECOD,	3	Ministry of Agriculture, livestock and Environment, P. O. Box 159, Zanzibar. E-mail: kilimo@zanlink.com

		ZAFIDE		
Programmes	Cassava crop resistance improvement, Livestock development, Agricultural support, Food security, Tanzania Social Action Fund (TASAF) II, Forest Development , coastal forest mgmnt	Ministry of Agriculture, DCCFF, MACEMP, Livestock development department and Plant Protection Division	4	Ministry of Agriculture, livestock and Environment, P. O. Box 159, Zanzibar. E-mail: kilimo@zanlink.com
	Different crop and animal research programmes	ARI Uyole	8	
Projects and partnerships	Fruits flies control, ASSP, PADEP, MACEMP, Costal Forest, Agro processing project,	DCCFF, MACEMP, Livestock development department, NGOs	6	Ministry of Agriculture, livestock and Environment, P. O. Box 159, Zanzibar. E-mail: kilimo@zanlink.com
Others	Large land space for different taxonomic and research activities Opportunity to reach potentially farming communities in the productive areas of Tanzania	ARI Uyole	4	

5a. Current status and future plans of resources

CATEGORY	Current status (Consistence with the ranking but only up to 5 not 10)	Gaps	Future plans
Collections and Databases -	(4) Collection is quite highly	Inadequate knowledge on resources use	Most of the Institutions' plan to develop their collections and data

	ranked (1) whereas the database is low	<p>Inadequate financial and personnel resources</p> <p>poor allocation of resources poor or inadequate resources development and management</p> <p>Few of the preserved specimens are wearing away, therefore, there is need for new collections to replenish the existing stock</p> <p>Storage facilities are poor, hence need for contemporary storage techniques and facilities</p>	<p>base including training of personnel and capacity building of the institutions in general</p> <p>Modern curation is required and thereafter put into databases via digitization</p> <p>To replenish the existing collection, To store specimens in improved containers (e.g. metal cabinets, laminated plans, etc.)</p>
Secondary e.g. keys, literature, publications and tertiary	3	Inadequate knowledge, inadequate resources, least priority, limited local platform to publish the results/ findings	<p>To encourage people to research, to support or direct funds to research, to establish data banks and develop more keys / guideline for key resources identification</p> <p>Explore local avenues for publishing taxonomic information</p>
	2	Few published keys are	To use modern taxonomic tools and

		available. New keys for newly identified pests on different crops are required	resources and prepare products (field guides, pictorial keys, id cards) for newly identified pests
Communication resources	3	Inadequate knowledge and resources, low capacity in resources development and management techniques, inadequate dissemination/ coordination of available resources	Improve communication within and outside the institution Review networking, partnership and coordination among institutions and NGO addressing similar or related issues
Other resources			
Technologies	2	Low capacity and inadequate resources	Improve the skill and knowledge by training in areas that have limited expertise
Expertise	2	Few personnel with specialization in the field of UVIMA interest such as entomology, pests, diseases and taxonomy at large In many cases well trained (MSc and above) taxonomic experts are lacking	Improve the skill and knowledge by training in areas that have limited expertise Continue working with general scientists while encouraging scientists to train in taxonomy to advanced levels
Hardware	3	Inadequate resources and low capacity of responsible institutions	To develop more working tools and equipment to cater for the local needs, to train people on the uses of available resources that are adopted from other areas
Software	3	Inadequate resources and	To develop more software to cater the

		low capacity of relevant institutions	local issues, to train people on the uses of available software that are adopted from other areas
Programmes	3	Fragmented knowledge and limited coordination among institutions undertaking similar programmes. Also insufficient resources and poor sustainability	To improve coordination among institution with similar programmes, and enhance monitoring, evaluation and eventual adjustment of the programme in order to achieve sustainability
Projects and partnerships	3	Fragmented knowledge and limited coordination among institutions undertaking similar programmes.	To improve coordination among institution with similar programmes, and enhance monitoring, evaluation and eventual adjustment of the programme in order to achieve sustainability
		Partnership with different stakeholders exists but ineffective Need for developing new projects, Need for strengthening existing partnerships and establish new one with the private sector	To develop new projects, To strengthen existing partnerships, To establish new strategic partnerships especially with the private sector <i>Triple helix</i> approach is proposed whereby the researchers work in partnership with the government and the industry
Others – Training	2	Shortage of trained personnel in taxonomy	To train young personnel in taxonomy

5b. Current status and future plans of Infrastructure

CATEGORY	Current status (Consistence with the ranking but only up to 5 not 10)	Gaps	Future plans
Collections and Databases	3	Inadequate infrastructure establishment and management	Concerned institutions plan to further develop their collections and data base infrastructure including training programmes, improving herbaria, archives, libraries and laboratories. Ultimately digitizing existing and new data and information
Secondary e.g. keys, literature, publications and tertiary	3	Inadequate funds, space and other resources for research and data management. Limited platform sharing and disseminating taxonomic products.	To encourage people to undertake research, to support or channel funds to research, for the establishment of data banks hence digitization and dissemination.
Communication infrastructure	3	Inadequate knowledge, skills and resources for establishing and sustaining communication infrastructures such as wireless internet, radical and preparation of acceptable radio and TV programme. Low capacity to compete	Improve communication within and outside the institution, review coordination among institutions and NGO addressing similar or related issues, use the available communication media to process and disseminate information and <i>prepare and take timely advantage</i> of the incoming fibre optic technology in the region.

		with other programme in the media responsible for information sharing	
Other resources			
Technologies	2	Low capacity and inadequate resources for infrastructure development, Un maintained or poor infrastructure development techniques including herbarium, museum, archives and varieties of collection	To improve the skill and knowledge of areas with shortage of expertise
Expertise	2	Few personnel with specialization in the field of UVIMA interest such as entomology, pests, diseases and taxonomy at large	To improve the skill and knowledge of areas with shortage of expertise
Hardware	3	Inadequate resources and low capacity of responsible institutions	To develop more working tools and equipment to cater for the local needs, to train people on the uses of available resources that are adopted from other areas
Software	2	Inadequate resources and low capacity of responsible institutions	To develop more software to cater the local issues, to train people on the uses of available software that are adopted from other areas
Programmes	3	Fragmented and little coordination with institution with similar	To improve coordination among institution with similar programme, to improve monitoring scheme of the

		programmes. Also insufficient resources and poor sustainability	programme so to enhance the programme sustainability
Projects and partnerships	3	Fragmented and little coordination with institution with similar programme. Inadequate resources	To improve coordination among institution with similar projects, to improve monitoring scheme of the projects to enhance the sustainability, To generate more resources that will support sustenance and the extension of the project area
Others			

5c. Current status and future plans of Opportunities

CATEGORY	Current status (Consistence with the ranking but only up to 5 not 10)	Gaps	Future plans in terms of opportunities
Collections and Databases	3 Collection is quite highly ranked (1) whereas the database is low	Inadequate knowledge on resources use Inadequate financial and personnel resources poor allocation of resources poor or inadequate resources development and management	<i>Edit these on the basis of opportunity</i> Establish network, collaboration and partnerships with developed loops e.g. EUROLOOP, SACNET and others in for purposes of standardization. Collaborate with other organizations, loops (e.g. EUROLOOP, SACNET etc) and other institutions worldwide

		<p>Few of the preserved specimens are wearing away, therefore, there is need for new collections to replenish the existing stock</p> <p>Storage facilities are poor, hence need for contemporary storage techniques and facilities</p>	<p>Initiate inter-institutional digitized data for effective utilization</p>
Secondary e.g. keys, literature, publications and tertiary	3	<p>Inadequate knowledge, inadequate resources, least priority, limited local platform to publish the results/ findings</p>	<p>Collaborate with other institutions abroad to promote the development of contemporary taxonomic tools and products to complement existing keys, literature etc.</p>
Communication resources	2	<p>Inadequate knowledge and resources, low capacity in resources development and management techniques, inadequate dissemination/ coordination of available resources</p>	<p>Review networking, partnership and coordination amongst local and international institutions to improve communication within and outside Tanzania</p>
Other resources			
Technologies	3	<p>Low capacity and inadequate resources</p>	<p>Network with established institutions abroad to improve skill and capacity by training in areas that have limited expertise</p>
Expertise	2	<p>Few personnel with</p>	

		<p>specialization in the field of UVIMA interest such as entomology, pests, diseases and taxonomy at large</p> <p>In many cases well trained (MSc and above) taxonomic experts are lacking</p>	<p>Continue working with renown taxonomists while encouraging local scientists to advance their taxonomic skills</p>
Hardware	2	<p>Inadequate resources and low capacity of responsible institutions</p>	<p>To develop existing working tools and equipment in order to achieve current needs in taxonomy.</p> <p>To train local para/taxonomists on the uses of available resources that are acquired from developed institutions</p>
Software	3	<p>Inadequate resources and low capacity of relevant institutions</p>	<p>To develop sufficient software to cater for the local demands and enhance training for their effective use as required.</p>
Programmes	3	<p>Fragmented knowledge and limited coordination among institutions undertaking similar programmes.</p> <p>Also insufficient resources and poor sustainability</p>	<p>To improve coordination among institution with similar programmes, and enhance monitoring, evaluation and eventual adjustment of the programme in order to achieve sustainability</p>
Projects and partnerships	3	<p>Fragmented knowledge and limited coordination among institutions undertaking similar programmes.</p>	<p>Put in place an effective evaluation and monitoring system in collaboration with partner institutions</p>

Others	3	Partnership with different stakeholders exists but ineffective Need for developing new projects, Need for strengthening existing partnerships and establish new one with the private sector	Develop new projects to work in partnership with related institutions from the other LOOPs in order to strengthen existing collaborations
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6. Existing communication strategies and dissemination channels

CATEGORY	Name (List all strategies and channels you have come across in your country)	Institution List the all institutions in your country where these are located	CONTACTS Give contact details of the Institution and focal person
Networks	Strategies: workshops, exhibition, seminar, conferences, brochures, TV pgms, News feature, news article Channels - ANGOZA – the umbrella of all NGOs of Zanzibar FARI- Regional forum of Academic and Research Institutions	MVIWATA , DCCFF, WIOMSA, livestock development department, Environment, Fisheries, NGOs, Archives/ Antiquities, Tourism, Agriculture, Research and Extension,	The Ministry of Agriculture, livestock and Environment, P. O. Box 3526, Zanzibar, Tanzania E-mail: kilimo@zanlink.com Tanzania Broadcasting Services

	<p>ZAFIDE –unites farmers, Chambers of commerce UWATA- unites farmers of Tanzania TAF- Unites foresters of Tanzania TASAF-supports various institutions and NGOs MVIWATA- Mtandao wa wakulima Tanzania, JECA and SECA- Unites VCCs of southern regions in Uguja, NGENARECO unites VCCs around Ngezi Vumawimbi Conservation areas of Pemba, PADEP, MACEMP, ASSP, PADEP and TV and Radio Channels of national and International levels</p>		<p>Print media: Nipashe News, the Guardian www.ippmedia.com Tanzania Daima www.freemedia.co.tz The Citizen (contact person: Bakari Machumo - Reporter)</p>
	<p>Activity planning meetings, Review and evaluation workshops, Shows and trade fairs, Telephone, E-mailing, Letters, Media (papers, radio, TV)</p>	<p>MAFS, ARI Zonal offices</p>	<p>ARI Uyole Mr D Kabungo, Mr L Nsemwa</p>
<p>Partnerships</p>	<p>Strategies: workshops, exhibition, seminar, conferences, brochures, TV programs, News feature, news article and other promotional materials Channels: MACEMP, SMOLE, PADEP, CARE, TASAF, MALE,</p>	<p>Tanzania Agricultural Society (TASO), DCCFF, livestock development department, Environment, Fisheries, NGOs, Archives/ Antiquities, Tourism, Agriculture, Research and</p>	<p>The Ministry of Agriculture, livestock and Environment, P. O. Box 3526, Zanzibar, Tanzania E-mail: kilimo@zanlink.com</p>

		Extension,	MAFC
	Planning meetings, Review and evaluation workshops, Training seminars, Visits, Shows	ARI offices	ARI
Collaborations	Strategies: workshops, exhibition, seminar, conferences, brochures, TV pgms, News feature, news article and other promotional materials Channels: WWF, UNDP, TAFORI, ICIPE, Universities (local and international)	DCCFF, livestock development department, Environment, Fisheries, NGOs, Archives/ Antiquities, Tourism, Agriculture, Research and Extension,	The Ministry of Agriculture, livestock and Environment, P. O. Box 3526, Zanzibar, Tanzania E-mail: kilimo@zanlink.com MAFC
	Planning meetings, Review and evaluation workshops, Training seminars, Visits, Shows	ARI offices	ARI
Others	Farmer field days	ARIs, District extension offices	ARI

7. Defining specific challenges, constraints, key gaps and opportunities for UVIMA

#	Issue/Category	Specific challenges	Constraints	Key gaps	Opportunities	Proposed Solution
	Pollinators	Institutions have fragmented activities with limited impact Various habitats and	Poor resources, inadequate skills and lack of experience	Fragmented databases for pollinators.	Available small grants (e.g. from WIOMSA, MACEMP, TASAF,	To improve, networking, partnership and coordination among institutions

		ecosystems are threatened with destruction hence endangering the existence of the pollinators and other organisms inhabiting them	Weak linkages among the concerned institutions Lack of networking, coordination and collaboration among experts both locally and internationally	Limited coordination among institutions Limited personnel and institutional capacity	TanBIF) to support digitization of data. beekeeping and Butterflies farming by various NGOs habitat restoration campaigns by various NGOs	Increase capacity of participating institutions Improve the capacity of personnel through training Improve available resources including data bases for the pollinators.
		Important pollinators not well documented High destruction rates of habitats and ecosystems occupied by the pollinators There is low number of people interested in pollinators and related taxonomic groups	Limited human resources, Lack of policy on pollinator conservation Low number of youth participate in biodiversity and habitats conservation	Limited trained manpower Community not highly motivated Taxonomic activities undertaken in various institutions not	Establish partnerships with wildlife, agricultural, forest, NGOs addressing conservation Train and generate interest to the youth	To solicit and enhance partnerships with wildlife and forestry institutions, Create awareness among policy makers including the ministry of education and universities

				facilitated		
	Invasive Alien species	<p>Institutions have fragmented activities leading to possible detrimental effect to the biodiversity, ecosystem and human wellbeing</p> <p>Various habitats and ecosystems are threatened with destruction making them susceptible to exotic organisms including IAS.</p>	<p>Poor resources, inadequate skills and lack of experience</p> <p>Weak linkages among the concerned institutions</p> <p>Lack of networking, coordination and collaboration among experts</p>	<p>Fragmented information on IAS.</p> <p>Limited coordination among institutions</p> <p>Limited personnel and institutional capacity</p>	<p>Available small grants (e.g. from WIOMSA, MACEMP, TASAF, TanBIF) to support digitization of data.</p> <p>There is limited effort to address IAS management by various NGOs</p>	<p>To improve, networking, partnership and coordination among institutions addressing IAS</p> <p>Increase capacity of participating institutions</p> <p>Improve the capacity of personnel through training</p> <p>Improve available resources including data bases for the IAS</p>
		<p>Poor documentation of Important IAS.</p> <p>IAS causes high destruction rates of ecosystems and biodiversity</p> <p>There is low number of people working on IAS</p>	<p>Limited human resources, Lack of policy on IAS management</p> <p>Limited knowledge on IAS within the communities</p>	<p>Limited trained manpower</p> <p>Taxonomic activities undertaken in various institution</p>	<p>Establish partnerships with the Global Invasive Species Programme (GISP) and others</p> <p>Train and generate interest in the</p>	<p>To solicit and enhance partnerships with GISP and related programmes</p> <p>Create awareness among policy makers including the ministers of environment, forestry, education as well as universities</p>

				s not facilitated	knowledge and management of IAS	
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	<p>Pests</p>	<p>Institutions have fragmented activities leading to possible detrimental effect to agriculture, health, food security and human wellbeing</p> <p>Various habitats and ecosystems are threatened with destruction making them susceptible to pests.</p> <p>Application of excessive pesticides destroys the biodiversity and the environment; it is highly expensive to farmers</p>	<p>Poor resources, inadequate skills and limited expertise</p> <p>Weak linkages among the institutions concerned with pests</p> <p>Poor of networking, coordination and collaboration among experts and the farmers</p>	<p>Fragmented information on pests.</p> <p>Limited coordination among institutions</p> <p>Limited personnel and institutional capacity</p>	<p>Limited support on management of fruits flies and Indian house crow from programmes such as MACEMP, SMOLE, PADEP, TASAF etc, The available local people with pest management skills, willingness of institutions and community to participate in pest control initiatives, and on-going ASSP and PADEP projects that encourage the farmers to learn by doing</p>	<p>To improve, networking, partnership and coordination among institutions addressing Pests</p> <p>Increase capacity of participating institutions</p> <p>Improve the capacity of personnel through training</p> <p>Improve available resources including data bases for the pest management</p>
		<p>Poor documentation of pests of agricultural Importance.</p>	<p>Limited human resources, weakly</p>	<p>Limited trained personnel</p>	<p>Establish partnerships with the</p>	<p>To solicit and enhance partnerships with pests management</p>

		<p>Pests cause high destruction to crops, domestic animals and agricultural biodiversity</p> <p>There is limited number of people working on pests</p>	<p>coordinated policies on pest management</p> <p>Inadequate knowledge on pest attacks within the communities</p>	<p>Taxonomic activities undertaken in various institutions not facilitated</p>	<p>international pest management Programmes</p> <p>Train and generate interest in the knowledge and management of pests</p>	<p>programmes</p> <p>Create awareness among policy makers including the ministers of agriculture, health, environment, forestry, education as well as universities</p>

8. Checklist of persons in the country with knowledge in Taxonomy including (Pollinators, Pests and IAS)

Please provide updated list of Taxonomists in your field (list the UVIMA members and specialists first): Prepare this in an Excel file **(To be submitted after harmonization and editing)**

3. Related Projects

(To be updated)

Please report on the status of projects whose objectives are more or less similar to UVIMA Project in your country along the lines of your consultancy using the table below

Project Name	Implementing institution	Source of funding	Status (project beginning, mid-term, ending)	Focal person	Contact details
Fruits flies control	DCCFF, PPD	MACEMP, PADEP and ASSP	Midterm	Ms. Zainab Salim and Yussuf H. Kombo	P. O. Box 3526, Zanzibar yhkombo@yahoo.com
Cassava study on resistance varieties	Agricultural Research and Extension	Government/	Midterm	Haji H. Saleh	0777424374
Indian house crow control	DCCFF and Environment	MACEMP and SMOLE	Beginning	Mr. Yusuf H. Kombo, Mr. Ali Mwinyi and Mr. Alawi H. Hija	P. O. Box 3526, Zanzibar yhkombo@yahoo.com
Marine invasive species	DOE	Capacity	Continuous	Ms. Farhat Mbarouk	farhat@wiomsa.org
Mangroves insect pests in Pemba	DCCFF and PPD	MACEMP	Midterm	Mr. Said J. Ali	DCCFF-Pemba msitumkuu@yahoo.com
Eradication of <i>Maesopsis eminii</i> in Ngezi Conservation Area	DCCFF	Government	Mid term	Mr. Said J. Ali	DCCFF-Pemba msitumkuu@yahoo.com
Promotion of beekeeping	DCCFF, ZABA,	MACEMP,	Midterm	Mgeni R.	P. O. Box 3526, Zanzibar

	ZALWEDA, SONARECOD	UNDP,		Mgeni	
Seaweeds culture	IMS	MASMA	Mid-term	Dr. Flower Msuya	msuya@ims.udsm.ac.tz
Marine invasive weeds eradication	Chumbe Island Marine Park	Chumbe Island Marine Park	Periodic	Mr. Khamis Khalfan	
Trans-boundary diseases control	Livestock development Department/ Disaster prevention department	Government	Periodic	Dr. Ali Rabia and Dr. Warid	Department of livestock development, Disaster prevention department Zanzibar
Tsetse fly control monitoring/ livestock diseases control	Livestock development Department	Atomic Energy MACEMP/	Continuous process	Dr. Ali Rabia and Dr. Warid	Department of livestock development, Zanzibar
Butterflies exhibition at Pete			Ending		

Annex 1: Inventory of Outputs/Services (fill in as appropriately as you can)

3. Consultancy meetings

No	Meeting Type	Title	Venue	Dates	Convened by	Organized by	# of Participants	Report issued as doc no	Language	Dated
1.	Planning		Wiomsa, Zanzibar	12/5/09	M. Osore consultant	M. Osore	3	01	English	
2.	Compile draft		Wiomsa, Zanzibar	21/5/09	S. Jumah	M. Osore		01	English	
3.	Debriefing , assessing progress		TPRI, Arusha	1/06/09	Ijani	Organising committee (Ijani, Lossina, Lyatuu)	9	Draft Report	English	
4	Compilation of collected baseline data and information		Sokoine University of Agriculture, Morogoro	18 – 19 June, 2009	M. Mwatawala	Organizing committee (Mwatawala & Rwegasira)	5	Midterm Report	English	

b) Electronic & Printed Materials (from the books, pamphlet, material, internet sites, grey literature)

No	Type	Title	Author(s)/Editor(s)	Publisher	Symbol (e.g. ISBN, ISSN where available, applicable)	Publication Date	Where to get it and / or contact person
1.							
2.							
3.							

Annex 2: List of Common Pests, Pollinators and Invasive Alien Species in Tanzania

A. Pests

1. Weevils: Rice weevils *Sitophilus oryzae*, Granary weevil *Sitophilus granarius*, Maize weevil *Sitophilus zeamaze*
2. Bruchids: *Zabrotes subfasciatus*, *Acanthoscelides obtectus*
3. Fruit flies: *Bactrocera invadens*, *Bactrocera cucurbitae*, *Bactrocera latifrons*
4. Whiteflies: *Bemisia tabaci*, *Bemisia afer*, Spiralling white fly *Aleurodicus dispersus*
5. Stem borers: *Chilo partellus*, *Busseola fusca*, *Sesamia calamistis*, *Eldana saccharina*
6. White grubs: *Cochliotis melolonthoides*, *Heteronychus licas*
7. Mites: Red spider mites *Tetranychus urticae*, Cassava Green Mite *Mononichellus tanajoa*
8. Thrips: *Thrips tabaci*
9. Aphids: Cotton aphid *Aphis gossypii*, Groundnut aphid *Aphis craccivora*
10. To be extended...

Vertebrate pests

1. Rats: *Rattus rattus*, *Mastomys natalensis*, East Africa Mole rats, *Tachyoryctes splendens*, Kenyan mole rates, *Tachyorectes ibeanus*
2. Birds: Indian crow, *Corvus splendens*, *Quelea quelea*, chestnut weaver *Ploceus rubiginosus*, Village weaver *Ploceus cucullatus*
3. To be extended...

Others

1. *Striga* spp.
2. Black Xanthomonas Wilt, BXW (Banana)
3. Fusarium wilt (Banana)
4. Black sigatoka (Banana)
5. To be extended...

B. Pollinators

1. Honey bees
2. Bumble bees
3. Carpenter bees

4. Digger bees
5. Stringless bee
6. Sweat bees
7. Moths – Tiger moth
8. Butterfly
9. To be extended and scientific name to be provided...

C. Invasive alien species

1. Fruit flies: *Bactrocera invadens*, *Bactrocera curcubitae*, *Bactrocera latifrons*
2. Brown citrus aphid *Toxoptera citricida*
3. Cypress aphid *Cinara cupressi*
4. Larger Grain Borer *Prostephanus truncatus*
5. Cassava mealybug *Phenacoccus manihoti*
6. Citrus woolly aphid *Aleurothrixus floccosus*
7. Cassava green mite *Mononychellus tanajoa*
8. Erect prickly pear *Opuntia dillenii* (Formerly *Opuntia stricta*)
9. Mauritius thorn *Cesalpinia decapetala*
10. Witchweed *Striga* spp.
11. Water hyacinth *Eichhornia crassipes*
12. Parasitic twiner *Cuscuta australis*
13. Mexican poppy *Argemone mexicana*
14. Lantana *Lantana camara*
15. Umbrella tree *Maesopsis eminii* (plant)
16. Leucaena *Leucaena leucocephala*
17. Golden dewdrop *Duranta erecta*
18. Cassava Mosaic Virus
19. Cassava Brown Streak Virus
20. Norwegian rat *Rattus norvegicus*
21. To be extended...

There are institutions which are regional with specific mandates (e.g. WIOMSA for marine and coastal)

11. To be extended...