KINGDOM OF CAMBODIA

Nation Religion King

Training Module Towards

Capacity Building and Awareness on

Mimosa pigra

Report Submitted to CABI under the UNEP/GEF Project:

Removing Barriers to Invasive Species Management in Production and Protection of Forests in SE Asia-FORIS Cambodia Project

(UNEP/GEF Project No. 0515)

August 2015

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MODULE 1:

General Concept of IAS:
Characteristics, Distributions and Consequences

Section 1: Getting to know the participants and setting the ground rules

Objectives:

- To encourage participants to get to know each other throughout the session.
- To let participants know the ground rules of the training session.

Target group:

- Multi-groups (fishermen, farmer and household)
- Multi-sectors (Community leaders and local authorities)
- Selected 20 to 30 male and female participants

Materials:

- Markers and papers

Time:

- 10 -15 minutes

Process Instructions:

Note for facilitator: *(The facilitator should ask the participant as follow)*
Ask participants to introduce themselves so that they can get to know each other. Then ask the participants to set up the rules for the training session. This includes deciding on the timetable (e.g. when to start, when to have a break, when to have lunch, when to start the afternoon session, when to have an afternoon break, and when to finish).

Ask the participants if they are agree with the ground rules and ask if there are any other rules to be set. Write the ground rules down on the flipchart.

Section 2: What is Invasive Alien Species (IAS)?

Objectives:
After finishing this lesson, the participants will be able to identify:

- An Invasive Alien Species (IAS)
- Flora and fauna species in Cambodia

Target group:

- Multi-groups (fishermen, farmer and household)
- Multi-sectors (Community leaders and local authorities)
- Selected 20 to 30 male and female participants

Materials:

- Markers, flipcharts, papers and images of IAS Handouts, including flora and fauna species

Time:

- 90 minutes

Method:
Brainstorm and discuss in large groups what IAS means for each participant. This session should be used as initial exercise with the expectation that other lessons will correspond to this session.

Process Instructions:
Note for facilitator: *(You can explain as follows)*

Invasive Alien Species (IAS)
An Invasive Alien Species (IAS) occurs in all taxonomic groups. They can be bacteria, viruses, fungi, insects, fishes, snails, reptiles, birds, mammals or plants, which are introduced to an area where they wouldn't occur naturally. If the species is introduced without its natural enemies that operate to keep the species under control, the species can spread. This causes damage to biodiversity, peoples' livelihoods and development. These are called invasive alien species.

IAS is being introduced at an increasing rate through trade, travel, and transport, and is threatening Cambodia's biodiversity. The introduction of exotic species in agriculture and aquaculture, and amenity is increasing in Cambodia. The introduction and

establishment of IAS from outside Cambodia is having significant negative impacts on native species. A factor, which is contributing to the establishment of IAS, is the massive conversion of forest habitats to other uses. Cambodia lost 22% of its forest cover (2.8 million ha) between 1990 and 2010, leading to rapid landscape degradation and the proliferation of IAS. [1]

Figure 1: Invasive Alien Species in Cambodia

At least eleven invasive species have been found in the core area (Stung Sen), including exotic fish species such as *Cyprinus carpio, Hypophthalmichthys molitrix* and *Labeo rohita* (Figs 2, 3 & 4). They are regularly caught in small quantities in Tonle Sap Lake and in the Mekong River[2]. Furthermore, several exotic plants may have spread into different ecological zones, Common IAS flora, include *Mimosa pigra, Eichhornia crassipes*, *Panicum repens* and *Chromolaena odorata*.

[1] Project document "Removing Barriers to Invasive Species Management in Production and Protection" (p. 15)
[2] Baseline Study on Biodiversity and Socio-Economic prior to management intervention on Mimosa Pigra at Stung Sen Core Area National Pilot Site, Ministry of Environment of Cambodia, 2013

Table 1: Some IAS found in Cambodia

Common name	**Scientific Name**
Flora species	
Giant Mimosa (Banla Yuon)	*Mimosa pigra*
Water Hyacinth (Kam ploak)	*Eichhornia crassipes*
Torpedo Grass (Smao slab tea)	*Panicum repens*
Siam Weed (Kantrien Khet)	*Chromolaena odorata*
Fauna species	
Golden Apple Snail	*Pomacea canaliculata*
Common Carp	*Cyprinus carpio*
Silver Carp	*Hypophthalmichthys molitrix*
Common Tilapia	*Oreochromis aureus*
Nile Tilapia	*Oreochromis niloticus*
Suckermouth Catfish	*Pterygoplichthys gibbiceps*
Louisana Crayfish[3]	*Procambarus clarkii*
Rohu	*Labeo rohita*

Source: Adopted and verified by Global Invasive Species Database (GISD) Miththapala (Ed.) and IUCN Cambodia

Fauna Species Description

Cyprinus carpio

Cyprinus carpio often grows 30 to 60 cm in length and weighs 0.5 to 4 kg. It is not uncommon for common carp to reach 15 to 20 kg. Males are usually distinguished from females by the larger ventral fin. *Cyprinus carpio* are characterized by their deep body and serrated dorsal spine. The mouth is terminal on the adult and sub-terminal on the young. Color and proportions are extremely variable, but scales are always large and thick. [4] The *Cyprinus carpio* was introduced into Cambodia from Taiwan in 1969 for aquaculture. It is now established in the wild and widely used in aquaculture. [5]

[3] Identified by IUCN Cambodia
[4] http://animaldiversity.org/accounts/Cyprinus_carpio/#physical_description
[5] http://www.issg.org/database/species/distribution_detail.asp?si=60&di=49435&pc=*&lang=EN

Figure 2: *Cyprinus carpio*

Hypophthalmichthys molitrix

Hypophthalmichthys molitrix are olive green in color on their dorsal side and silver on the ventral side. They have a deep, laterally compressed body and a large head. Their eyes are located near the ventral side, which makes them easily distinguishable from other species. Both dorsal and anal fins are present, but an adipose fin is lacking. They have 1 to 3 dorsal spines, 1 to 3 anal spines, 6 to 7 soft dorsal rays, and 10 to 14 soft anal rays. The lateral line is approximately 80 to 130 scales in length. They have numerous thin gill rakes (100 or more). *Hypophthalmichthys molitrix* is also characterized by a smooth ventral keel on the abdomen that runs from the anus to the gill membrane. *Hypophthalmichthys molitrix* vary considerably in size; most are relatively small (10 to 30 cm), but some can grow as much as 1 m in length and weigh in excess of 60 pounds (27 kg).[6] It was introduced into Cambodia in 1969 from Taiwan.[7]

Figure 3: *Hypophthalmichthys molitrix*

Labeo rohita

Labeo rohita body's is laterally compressed & fusiform, attaining maximum length of one meter. Their colour is blackish grey on the back & silvery white on their underside. Their body is covered with overlapping cycloid scales, and their head is prominent with a blunt snout. They have large eyes, without eyelids.

[6] http://animaldiversity.org/accounts/Hypophthalmichthys_molitrix/#physical_description
[7] ftp://ftp.fao.org/docrep/fao/008/a0113e/a0113e07.pdf

Their mouth is sub terminal, directed downwards & surrounded by thick lips. The upper lip has a pair of short barbells & the lower lip fringed. Other species of *labeo* barbells don't have pectoral fins or spinout rays.[8] It was introduced from Vietnam in 1986.[9]

Figure 4: *Labeo rohita*

Flora Species Description

Mimosa pigra

Mimosa pigra is a prickly leguminous shrub that can reach up to 6m in height. It originates from tropical South and Central America but has been present in Cambodia since 1979. It has brown woody stems that branch from the base and which bear many sharp, curved thorns. The leaves are soft, green, finely-pinnate and fold inwards when touched (hence the name "Banla Prokob Yeak or Banla Ay Yas or Banla Youn"). The flowers are balls of stamens usually pink or mauve, sometimes almost yellow in color. The fruits are clustered pods, with a furry brown coating of small plant hairs, which break up into small sections (with one seed in each) when they mature.

[8] http://www.abhinav.ac.in/DoV/Labs/B/B12I3_Fishes.pdf
[9] ftp://ftp.fao.org/docrep/fao/008/a0113e/a0113e07.pdf

Figure 5: *Mimosa pigra* leaves, flower buds and stem

Eichhornia crassipes

The initial leaves of seedling *Eichhornia crassipes* are elongated and strap-like, but soon develop the familiar *spathulate* form and, under suitable unshaded conditions, swollen petioles, which ensure that, once dislodged, the seedlings will float from the mud into open water. The plant is very variable in size, seedlings having leaves that are only a few centimetres across or high, whereas mature plants with good nutrient supply may reach 1 m in height. Plants in an uncrowded situation tend to have short, spreading petioles with pronounced swelling, while in a dense stand they are taller, more erect and with little or no swelling of the petioles. The plant system consists of individual shoots/crowns each with up to ten expanded leaves arranged spirally (3/8 phyllotaxy) and separated by very short internodes. As individual shoots develop, the older leaves die off leaving a stub of leafless dead shoot projecting downwards. This may eventually cause the whole shoot to sink and die. Leaves consist of petiole (often swollen, 2-5 cm thick) and blade (roughly round, ovoid or kidney-shaped, up to 15 cm across). The base of the petiole and any subsequent leaf is enclosed in a stipule up to 6 cm long.

Figure 6: *Eichhornia crassipes*

Roots develop at the base of each leaf and form a dense mass: usually 20-60 cm long, though they can extend to 300 cm. The ratio of root to shoot depends on the nutrient conditions, and in low nutrient conditions they may account for over 60% of the total plant weight. They are white when formed in total darkness but often purplish under field conditions, especially in conditions of low nutrients. Periodically, axillary buds develop as stolons, growing horizontally for 10-50 cm

before establishing daughter plants. Extremely large populations of inter-connected shoots can develop very rapidly, though the connecting stolons eventually die.[10]

Panicum repens

Panicum repens is an erect, wiry, creeping, perennial grass, rooting at hairless nodes and bearing flowering stalks 30 to 90 cm tall. It spreads widely (up to 7 m), but does not form dense clumps. Its smooth, sharp-pointed, branched rhizomes are often swollen or knotty and have brownish or whitish scales. Its leaves are alternate. The inflorescence is an open terminal panicle, 6 to 20 cm long, with many tender branches pointing obliquely upwards. The spikelet's are pale green or pale yellow and often tinged with purple.

Figure 7: *Panicum repens*

Chromolaena odorata

Chromolaena odorata is a herbaceous to woody perennial with a bushy habit which forms a very dense thicket about 2 m high, in almost pure stands. This many-branched plant becomes lianescent when it has the opportunity to climb on a support. Isolated individuals start to branch when they reach a height of about 120 cm. After the first year of growth, the plant develops a strong, woody underground storage organ, which can reach a diameter of 20 cm. Stems are erect and become woody. Twigs are slightly striolate longitudinally, pubescent, opposite-decussate. Leaves are simple, opposite-decussate and without stipules.

[10] http://www.cabi.org/isc/datasheet/20544

They are rhomboid-ovate to ovate with an acute apex and a cuneate base. The blades are trinerved a few millimetres after the base, roughly crenate-serrate beyond their maximum breadth, slightly pubescent above and pubescent with numerous small yellow dots below (a lens is needed to see this). The petiole is 1-3 cm long, and the blade 5-14 cm long and 2.5-8 cm broad. Leaves and twigs produce a characteristic smell when crushed. Capitula are grouped in one, three or five convex trichotomic corymbs 5-10 cm in diameter, at the end of the twigs.[11]

Figure 8: *Chromolaena odorata*

Note for facilitator:

The facilitator should ask further whether the participants have further questions, as per the handout.

1. The facilitators should start to collect question from the participants.
2. Write down the questions raised by the participants on separate flipcharts, leave them there, and keep the flipchart in a place where all participants can see it until the end of the training. In so doing, the facilitators can review whether the training has already responded to the questions posed by the participants. Some questions raised by the participants are likely to be similar to the questions posed in the first handout given.
3. Then, divide participants in the small group.
4. Allocate 15 minutes for each group to discuss the following questions.

[11] Gautier L, 1992b. Taxonomy and distribution of a tropical weed: Chromolaena odorata (L.) R. King & H. Robinson. Candollea, 47:645-662.

- What do you know about IAS?
- Why and how does a plant or animal become invasive?

5. Each group appoints one person to facilitate and one person to take notes and present.
6. Wrap up the session by reviewing what has been presented and discussed including the definition of what IAS actually is, summarizing information on the IAS present in Cambodia and their impacts.
7. At the end of the section, the facilitators distribute handouts of related documents to the participants.

Section 3: How does IAS become invasive?

Objectives:

After finishing this lesson, the participants will be able to:

- Know how IAS can be grown and spread.
- Discuss the issue of *Mimosa pigra, Eichhornia crassipes* and other flora, and the different ways that that they can spread.

Target group:

- Multi-groups (fishermen, farmer and household)
- Multi-sectors (Community leaders and local authorities)
- Selected 20 to 30 male and female participants

Materials:

- Markers, Flipcharts, papers and pictures of *Mimosa pigra* , *Eichhornia crassipes* and other flora
- Handouts

Time:

- 45 minutes

Method:

Discussion in large groups

Process Instructions:

Note for facilitator: *(You can explain as follows)*

How does it spread?

The IAS plant seeds spread by floating on water, and being swept away by currents or in streams and floodplains. The seedpods adhere to clothing, coats of mammals (including cattle and small stock) and feathers of birds and can thus spread far and wide. The seeds and pods can also stick onto motorcycle tires, which facilitates their spread.

Mimosa pigra

Mimosa pigra has been present in Cambodia since 1979 and quickly began to spread and become invasive.

Mimosa pigra grows in wet places in the humid and sub-humid tropics. It occurs along roadsides, watercourses, riverbanks, floodplains and seasonally inundated wetlands. It is found on a wide variety of soils and is tolerant of flooding. *Mimosa pigra* is an aggressive prickly shrub and can form dense mono-specific stands on the floodplains. *Mimosa pigra* can survive both a seven month dry season and flooding in the wet season. One plant, within an average stand, can produce more than 9000 seeds annually, which fall mostly between the mid-wet season and the mid-dry season. In a typical thicket, this would average to about 220,000 seeds per year. The seeds are borne in clusters of bristly pods that break up into segments containing a seed. The seeds can remain dormant in the ground for a number of years before germinating[12].

[12] Controlling evasion of the exotic shrub Giant Mimosa (Mimosa Pigra) in tropical Australian wetland, Michelle Marko

Figure 9: *Mimosa pigra* shrubs

Mimosa pigra reproduces via seeds. *Mimosa pigra* seeds are typically dispersed in two main ways: carried downstream during flooding or transported by animals or machinery such as vehicle or motorcycles. Animals can spread seeds in their dropping (e.g. cows or buffalos) or in mud attached to their bodies (e.g. pigs,buffalos or dogs). Humans can accidentally transport seeds attached to their clothing or equipment (e.g. boats, cars) after contact with plants.

Figure 10: *Mimosa pigra* fruit

Eichhornia crassipes

Eichhornia crassipes is a free-floating plant that reproduces by seeds and vegetatively through daughter plants that form on rhizomes and produce dense plant beds.[13] *Eichhornia crassipes* reproduces sexually by seeds and vegetatively by budding and stolen production. Daughter plants sprout from the stolon and doubling times have been reported of 6-18 days. The seeds are dispersed by birds and can germinate in a few days or remain dormant for 15-20 years. They usually sink and remain dormant during periods of stress (droughts). Upon inundation of water, the seeds germinate and renew the growth cycle. The seeds are dispersed by birds and can remain viable for 15-20 years and cover an area of 600 m^2 in a year.

Panicum repens

[13] http://www.ecy.wa.gov/programs/wq/plants/weeds/hyacinth.html

The grass spreads primarily via its rhizome. It has been noted to grow 1.3 centimeters (0.51 in) in length per day. The stems and rhizomes also produce tillers. The rhizome can endure drying and flooding. Dry or wet conditions may reduce the amount of shoots produced by the rhizome, but they do not kill it. The rhizome can disperse when parts of it break off and drop onto the substrate elsewhere, anchoring and putting up new shoots. The plant survives and sprouts after herbicide application, grazing, cutting, plowing or disking, and burning. [14]

Chromolaena. odorata

Further spread of *Chromolaena. odorata* in South-East Asia and the western Pacific was associated with the movement of military personnel and equipment during World War II. New foci of invasions have been identified as locations where key military bases were established, for instance Rabaul in New Britain and Jayapura in Irian Jaya (McFadyen, 2002). Similarly, troop movement appears to be responsible for the introduction of the weed to East Timor after 1975. It is very likely that much of the spread of the species in Indonesia resulted from the 1960s transmigration programme.[15]

Note for facilitator:

Show some pictures of Mimosa pigra and explain its biology and ecology and attributes that make it invasive. Make sure the participants understand the issues.

1. Allow the participants to raise questions or ask for clarification (10 minutes).
2. Following section 1 in Module 2, divide participants into small groups and allow them to share experience regarding *Mimosa pigra, Eichhornia crassipes, Panicum repens* and *Chromolaena odorata*.
3. Allocate 15 minutes for each group to discuss the following question: What are the attributes or characteristics of *Mimosa pigra, Eichhornia crassipes, Panicum repens* and *Chromolaena odorata* that contribute to their invasiveness?
4. Each group appoints one person to facilitate and one person to note and present.
5. Wrap up the lesson by explaining to the participants that some invasive plants can affect water flow, block sunlight from reaching native aquatic plants, starve the water of oxygen or invade agriculture land.
6. At the end of the session, the facilitators should distribute handouts of related documents to the participants.

[14] https://en.wikipedia.org/wiki/Panicum_repens
[15] http://www.cabi.org/isc/datasheet/23248#20057037246

Section 4: What are the impacts of IAS?

Objectives:

After finishing this lesson, the participants will be able to:

- Know more about the impacts of IAS
- Discuss the specific issue of the impact of *Mimosa pigra and Eichhornia crassipes*.

Target group:

- Multi-groups (fishermen, farmer and household)
- Multi-sectors (Community leaders and local authorities)
- Selected 20 to 30 male and female participants

Materials:

- Markers, Flipcharts, papers and invasive plant pictures
- Handouts

Time:

- 90 minutes

Method:

Discussion in large groups and small groups

Process Instructions:

Note for facilitator: *(You can explain as follows)*

Mimosa pigra and other IAS plants have many impacts including the displacement of native vegetation.

Mimosa pigra can diminish grazing/pastoral lands especially floodplains and reduce habitat for wild animals and plants. It can block waterways with impacts on transport and fisheries and can prevent peoples' access to both aquatic and terrestrial habitats. It can also affect water flow in natural streams and irrigation canals and is very difficult to remove in the long-term[16]. It can compete with rice farming if the *Mimosa pigra* roots remain after removal[17].

[16] Assessment on the level of understanding of Invasive Alien Species, especially Mimosa Pigra at Stung Sen, Prek Toal and Choung Khneas areas, Ministry of Environment (2014)

[17] Economy and Environment: Case studies in Cambodia (2001), Editor Bruce Mckenney

Eichhornia crassipes is also hindrance to water transport. Mats of *Eichhornia crassipes* can seriously hinder access to harbours and docking areas. Canals and freshwater rivers can become impassable as they clog up with densely intertwined carpets of the weed. It is also becoming a serious hazard to lake transport on Mekong River, as large floating islands of *Eichhornia crassipes* form, while many of the inland waterways of south east Asia have been all but abandoned.

Figure 10: Water Hyacinth block waterway

In addition, there are socio-economic impacts on local people who are living around wetlands. These impacts include hindering local people's ability to provide food for animals, household commodities, water and fuel wood[18].

Note for facilitator:

1. The facilitators should ask participants to discuss the following points:
   - Impacts to agricultural land;
   - Lead to a reduction in farmers;
   - Blocked access to stock watering points
   - Reduce the biodiversity of plant and animal life on the floodplains by outcompeting native plants and available habitat for animals;

[18] Mimosa pigra infestations and the current threat to wetlands and floodplains in Cambodia, Chin Samouth

- Could affect wildlife and exclude them from their feeding grounds;
- Negative impacts on fish habitat
- Decreased fish production.

2. Allocate 10 minute for questions and answers.
3. To keep the discussion flowing, base discussion on the questions raised by the participants and the prepared questions in the first handout. The facilitators should ask further questions as follows:
    - Why should we be concerned?
    - Why could IAS affect agriculture?
    - How does IAS block access to natural resources?
    - How does IAS reduce biodiversity?
    - What impact will a reduction in biodiversity have?
4. Divide in small groups of 4 to 6 peoples to discuss all questions above.
5. Each group appoints one person to facilitate and one person to note and present on behalf of it own group.
6. Wrap up the lesson by explaining to the participants that the impacts of IAS could be damaged biodiversity and livelihood.
7. At the end of the training, the facilitators distribute some documents to the participants, if possible.

Figure 11: Agriculture land invaded by *Mimosa pigra*

MODULE 2:

Management of IAS plants

Section 1: What to do about it?

Objectives:
After finishing this lesson, the participants will be able to:

- Have a basic understand of the method for preventing IAS and promoting re-vegetation.

Target group:

- Multi-groups (fishermen, farmer and household)
- Multi-sectors (Community leaders and local authorities)
- Selected 20 to 30 male and female participants

Materials:

- Markers, Flipcharts, papers and invasive plant pictures
- Handouts

Time:

- 60 minutes

Method:
Discussion in large groups and small groups

Process Instructions:
Note for facilitator: *(You can explain how to prevent the spread of Mimosa pigra)*

Reducing the spread of *Mimosa pigra* requires careful management of infestations of the soil and sand (which could contain *Mimosa pigra* seeds). Soil and sand in affected areas should not be removed. Any transport vehicle or machinery used in infested areas should be thoroughly cleaned before moving to other areas. Existing infestations should be monitored and feral animals, which are known to transport seeds and create conditions suitable for germination should be controlled.

If *Mimosa pigra* is introduced into an area, then prevention of spread is the next highest priority. Mapping, planning and allocation of sufficient resources are essential management tools. The spread of *Mimosa pigra* in the monsoon season, due to floodwaters, can be restricted by retaining vegetation cover, which impedes seed movement. Vegetation cover is best managed by controlled stocking and judicious use of fire.

Report new occurrences of *Mimosa pigra* to the relevant authority or government agency as soon as possible.

1. The facilitators should raise the following key points:
    - Preventing the spread of *Mimosa pigra* is essential in protecting Cambodian lands.
    - Once established, *Mimosa pigra* is very difficult to control.
    - The spread of *Mimosa pigra* can be prevented by using effective quarantine, hygiene and monitoring, and by controlling animals.
    - Control *Mimosa pigra* in small patches before it seeds by hand pulling, plowing or spraying herbicides.
    - Biological control agents also help to control *Mimosa pigra* in the long term
2. Allow the participants to ask questions or clarify any confusion related to this session.
3. Wrap up and conclude the session, handout any documents that may help participants to better understand the issues.

Section 2: How can IAS be controlled?

Objectives:

After finishing this lesson, the participants will be able to:

- Know how to control IAS
- Know how to control *Mimosa pigra*

Target group:

- Multi-groups (fishermen, farmer and household)
- Multi-sectors (Community leaders and local authorities)
- Selected 20 to 30 male and female participants

Materials:

- Markers, Flipcharts, papers and invasive plant pictures
- Handouts

Time:

- 90 minutes

Method:

Discussion in large groups and small groups

Process Instructions:

Note for facilitator: *(You can explain how to control Mimosa pigra)*

Mechanical or physical control:

Before thickets are established, isolated plants can be managed by mechanical or manual methods e.g. pulling, slashing, excavation of roots and burning. Plowing is a common clearing method.

Physical methods that use human labour are very labor-intensive and costly. Most manual work is expensive and has to be repeated for several years to remove all each plants. It takes a long time for seeds lying in the soil to become dormant. Monitoring for that potential dormancy period after eradication is necessary

Biological control:

Biological control is the most cost effective and long-term control strategy for *Mimosa pigra* and there are a range of bio-control agents available, which have been used in Asia and most in Australia. Biological control can be initiated at any stage of the overall process. Best results will be obtained when bio-control agents are released in areas with and abundant of *Mimosa pigra*, because these agents require a long time to be effective.

Chemical control:

Herbicides may be used with subsequent sowing of competitive plants to suppress regeneration from seed. Aerial spraying may be needed when the height and density of *Mimosa pigra* hinders access. Following herbicide treatment, dead *Mimosa pigra* stems should be mechanically cleared and burnt. Hot fires can kill mature *Mimosa pigra* or at least damage it so that follow-up control treatment is more effective. The outer edge of a *Mimosa pigra* stands is first killed with herbicides and then crushed by plowing.

Figure 12: Chemical control (FORIS Pilot Project site)

A more integrated plan combining mechanical, physical, chemical and biological control may result in quicker and more effective results.

1. Give instruction of the purpose of the lesson as well as clarify any confusion.
2. Ask the participants to divide into small groups of 4 to 5 peoples.
3. Ask the participants to share their ideas based on the following questions (spend 20 minutes)
    - Is *Mimosa pigra* present in your area?
    - Do you manage it using physical, chemical or biological control? Please explain
    - How much does it cost to remove Mimosa *pigra*?
4. Give 10 minutes for each small group to discuss.
5. Write down their idea on the flipchart.
6. Ask one representative each of the group to present what they have discussed. Each group should have 5 to 10 minutes for their presentation.
7. Conclude the discussion and then explain any unclear points.

Note for facilitator:

When a conclusion is made, it is important for the facilitator to emphasize that controlling IAS can be difficult and expensive work. We must be clear that the invader harms something we value. Because we cannot manage all IAS everywhere, we must restrict our efforts to reducing their impacts on selected high priority sites and species. When prioritizing species for control, it is the impact or harm that species may cause that is the primary concern.

Individual responses

Objectives:

- To evaluate the workshop and collect information for future workshops

Target group:

- All the participants

Materials:

- Evaluation forms, pens, a sample form is provided as a guide to the kind of questions that is useful to ask. Be aware to adapt this for your particular group, according to the maturity of the group, the kind of workshop and what you want to find out.

Time:

- 10 minutes

Facilitator Note

It is important to obtain ideas that can help you to improve your training methods and course contents.

Process Instructions

1. Hand out the evaluation forms, ask all participants to complete them and hand them in.
2. If time allows, go around in a circle and ask each participant to summarise the workshop using one word, phrase or sentence.
3. Afterwards read the responses carefully and use the information when you conduct a debriefing with the facilitator team.

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ANNEX I

Agenda

Training		
Time	Description	Responsibility
7:30 – 8:00	Registration	Training Team
8:00 – 8:30	Open Ceremony	Training Team
8:30 – 8:45	Module I (Section I) • Know the participants and ground rules setting	Training Team
8:45 – 10:15	Module I (Section II) • Understand what is an Invasive Alien Species (IAS)?	Trainer
10:15 – 10:30	Coffee Break	Training Team
10:30 – 12:00	Module I (Section III) • How does IAS become invasive?	Trainer
12:00 – 13:30	Lunch	Training Team
13:30 – 15:00	Module I (Section IV) • What are the impacts of IAS?	Trainer
15:00 – 15:15	Coffee Break	Training Team
15:15 – 16:00	Module II (Section I) • What to do about it?	Trainer
16:00 – 17:00	Module II (Section II) • How can it be controlled?	Trainer
17:00 – 17:20	Closing Ceremony	Training Team
17:20 – 17:30	Training Evaluation	Training Team

ANNEX II

Evaluation Form

Please tick under the face that best reflects your feelings in response to the following statements about the training (☺☺ = Fully satisfied, ☺ = Satisfied, 😐 = Medium, 😐 = Unsatisfied, ☹☹ = Not satisfied at all)

1. **The most interesting topics of the training:**

Descriptions	☺☺	☺	😐	☹	☹☹
Understand what are an Invasive Alien Species (IAS)					
How does it grow					
How it spread					
What are the impacts of IAS					
How can it be controlled					
What to do about it					

Any further comments?

_____

_____

_____

2. **The ability of trainer:**

Descriptions	☺☺	☺	😐	☹	☹☹
Understand what are an Invasive Alien Species (IAS)					
How does it grow					
How it spread					
What are the impacts of IAS					
How can it be controlled					
What to do about it					

Any further comments?

3. **The Venue:**

Descriptions	☺☺	☺	😐	☹	☹☹
Venue					
Coffee Break					
Food					

Any further comments?

4. **Overall Satisfaction:**

Descriptions	☺☺	☺	😐	☹	☹☹
Your overall satisfaction with the training?					
The delivery of the subject matter in the way that you can understand					
Clarity of key terms and concepts					
Time allocated for discussion of training					
Overall organization of the training					

Any further comments?