

Limitation and maintenance of mongoose-proof fence on the southern boundary of the Yanbaru forest region on Okinawa Island, Japan

Yasuo Iijima*, Astushi Kishimoto**, Go Ogura***, Yukihide Kisimoto****, Satoshi Nohara*, Katuhiro Yamasita*

*Yachiyo Engineering Co. Ltd., Okinawa Office

**Okinawa Prefecture Office

***Laboratory of Subtropical Zoology, University of the Ryukyus

****Taishin Shokai Co.

1. Background

Okinawa Prefectural Government, the Ministry of Environment and Northern Dam Construction Office conducted mongoose-eradication programs by using live traps in the northern part of the Okinawa region, i.e. Yanbaru, from 1993 to 2000. However, the mongooses could not be completely eradicated; low density of the mongoose population still exists in the Yanbaru region. The government had set a mongoose-proof fence on the southern boundary of Yanbaru to prevent mongoose invasion into the Yanbaru region (Figure 1).

2. Limitation of the fence

The fence has a limitation: it obstructs free movement of domestic species such as turtle (*Geoemyda japonica*) and crabs (*Sesarmops intermedium*). Some turtles were found sandwiched between the fences and the ground or the weed-killing mat. After the mat placed on the ground was removed, no turtle was injured by getting trapped in the mat.

Between June and February 2006, 49 dead crabs were found along the fence. It is known that crabs become active between June and November. Therefore, particular attention was paid to crabs during inspection in this period.

3. Maintenance of the fence

The fence is made of metal and its strength is calculated considering the damages that can be caused by typhoon wind, slight blowdown and sea water.

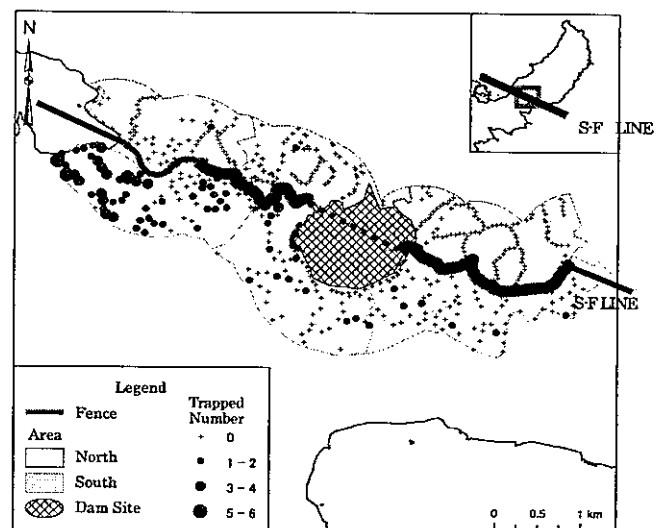
Therefore, there were only a few occasions when the fence required repair work—twice due to damage by a car crash and twice, by a landslide. These were restored by the volunteer works, because there is no maintenance cost in the government.

A fence covered with weed is a matter of concern. Thus, large-scale mowing by volunteers is essentially required every month.

This was the first time in Japan that a structure like mongoose-proof fence was constructed.

The fence is effective in mongoose control. Thus, it is necessary to systematize the maintenance technique by referring to the maintenance techniques employed in advanced countries.

This research was supported by the Environmental Technology Development Fund from the Ministry of Environment.



Limitation and maintenance of mongoose-proof fence on the southern boundary of the Yanbaru forest region on Okinawa Island, Japan

Yasuo Iijima*, Astushi Kishimoto**, Go Ogura***, Yukihide Kisimoto****, Satoshi Nohara*, Katuhiro Yamasita*

*Yachiyo Engineering Co. Ltd., Okinawa Office **Okinawa Prefecture Office
***Laboratory of Subtropical Zoology, University of the Ryukyus
****Taishin Shokai Co.



1. Background

Okinawa Island is located in the subtropical region to the south-east of the main Islands of Japan. In 1910, 17 mongooses were introduced into the southern part of the island to control Habu snakes and sugarcane rats. However, the invasive mongooses spread to northern Okinawa and invaded the Yanbaru forest region, which is inhabited by many endangered species (Fig2). Okinawa Prefectural Office initiated a mongoose control project in October 2000, with the goal of complete eradication of the mongoose in the Yanbaru region by March 31, 2014. Wire mesh live traps were set at 4771 points throughout the Yanbaru region, and a total of 6593 mongooses were caught and exterminated by March 2005.

Lining the exclusion fence for preventing the northward migration of mongoose by the 'S-F line' is currently undertaking. This enables to shut down the intrusion of mongoose into Yanbaru region from the south regions and leads to increase the intensity of capturing mongooses in Yanbaru region.

It is necessary to develop epochal methods to capture mongooses as the next step though there is no such effective ways discovered at the present day. Nevertheless, it can be emphasized that the scenario to eradicate mongoose in the area by setting the fence, has been developed. The prevention ratio with the metal fence (H=1.2m) was approximately 100% (gauge experience n=8).



Figure-2 Northern limit of Mongoose distribution and its expansion

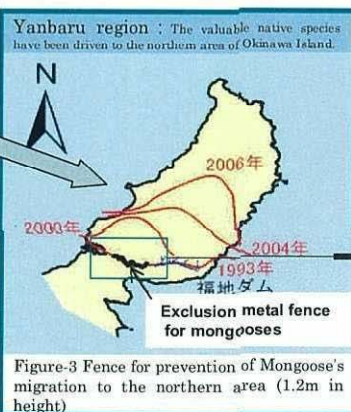
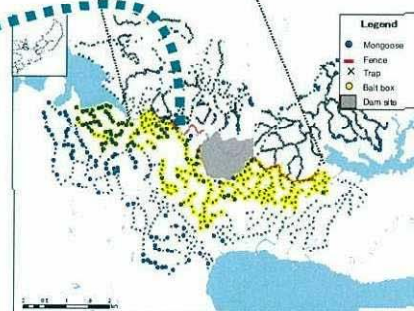


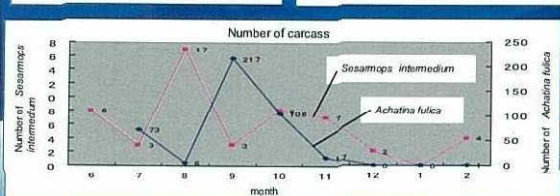
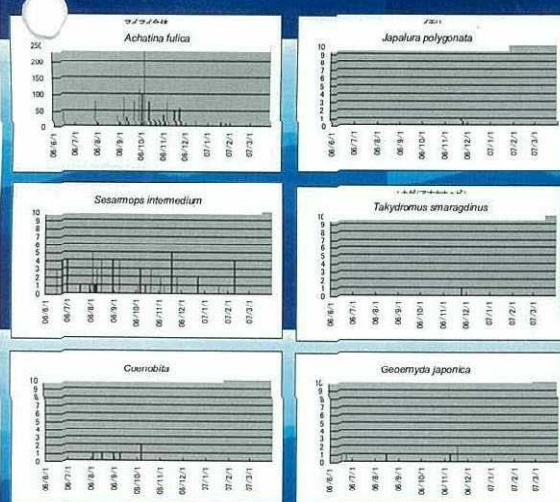
Figure-3 Fence for prevention of Mongoose's migration to the northern area (1.2m in height)



2. Limitation of the fence

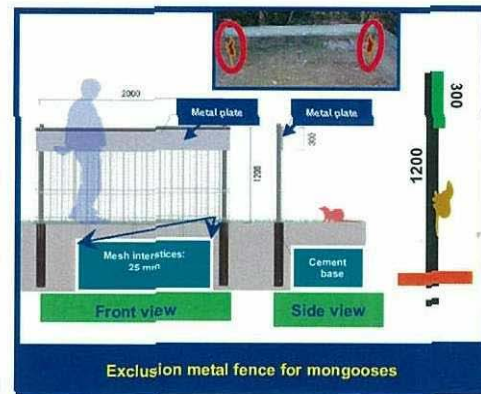
The fence has a limitation: it obstructs free movement of domestic species such as turtle (*Geomyda japonica*) and crabs (*Sesamops intermedium*). Some turtles were found sandwiched between the fences and the ground or the weed-killing mat. After the mat placed on the ground was removed, no turtle was injured by getting trapped in the mat.

Between June and February 2006, 49 dead crabs were found along the fence. It is known that crabs become active between June and November. Therefore, particular attention was paid to crabs during this period.



3. Maintenance of the fence

The fence is made of metal and its strength is calculated considering the damages that can be caused by typhoon wind, slight blowdown and sea water.



Therefore, there were only a few occasions when the fence required repair work—twice due to damage by a car crash and twice, by a landslide. These were restored by the volunteer works, because there is no maintenance cost in the government.

A fence covered with weed is a matter of concern. Thus, large-scale mowing by volunteers is essentially required every month.

This was the first time in Japan that a structure like mongoose-proof fence was constructed. The fence is effective in mongoose control. Thus, it is necessary to systematize the maintenance technique by referring to the maintenance techniques employed in advanced countries.

This research was supported by the Environmental Technology Development Fund from the Ministry of Environment.

Frequency of mowing

month	Execution days
June-06	3
July-06	3
August-06	4
September-06	2
October-06	2
November-06	1
December-06	1
January-07	0
February-07	1
March-07	0

