

Positive Stimuli in Measures Against Invasive Alien Species
Reward Systems for capture of Invasive Alien Species

Masahiro Sato, NPO “*Seitai Koubo*”¹

The main participants in the eradication of invasive alien species may be classified as follows:

(1) government, (2) producer’s associations and NPOs, and (3) individual producers and members of the public. The government’s subsidies and other stimulus measures are intended to encourage the parties (2) and (3) above to aim for progress, with financial aid and other preferential treatment.

One of the better-known methods in the eradication of invasive alien species is the payment of bounties. Here we assemble information on the systems used in Japan and comment on their features and failings.

1. Project sponsors

The Ministry of the Environment and 26 local government bodies have adopted bounty systems. Shiga prefecture, which embraces Lake Biwa, and the MoE on the island of Amami Oshima², have their own projects with special features, but most projects are for the eradication of raccoons and other species, in order to protect crops in farming villages.

2. Relevant species

Bounties are available for eight species: Taiwan Squirrel³, common Raccoon⁴, Nutria⁵, Javan Mongoose⁶, Largemouth Bass⁷, Bluegill⁸ and the Channeled (or Golden) Apple Snail⁹. The top three by number were Raccoons (66%), Taiwan squirrels (18%) and Nutria. In flourishing agricultural regions, bounties for these three species were frequently introduced by adding them to existing provisions for the eradication of native pests such as deer and wild boar. On the other hand, in cities such as Sakai and Tondabayashi (in Osaka), where urbanization has spread, bounty systems have been started to prevent damage specifically by Raccoons.

The single example of measures against the Golden Apple Snail was for collection of the adult, but there is also local assistance for the purchase of chemicals for eradication.

¹ = “Ecology Workshop”

² Located between Kyushu and Okinawa

³ *Callosciurus erythraeus thaiwanensis*

⁴ *Procyon lotor*

⁵ *Myocastor coypus*

⁶ *Herpestes javanicus*

⁷ *Micropterus salmoides*

⁸ *Lepomis macrochirus*

⁹ *Pomacea canaliculata*

Apart from the Golden Apple Snail, which is rated a “provisional IAS¹⁰”, the other seven species are listed in the Invasive Alien Species Act as Special Invasive Alien Species¹¹. Listing in the Act is intended to provide government and private citizens with a motive for eradication.

3) Implementation: Who can participate?

Qualifications to catch the target species and collect bounties vary in detail but are basically of two types.

- 1) Anyone may catch the target species and collect the bounty.
- 2) The bounty is paid to a specified organization such as the Hunters’, Fishermen’s or Farmer’s Association or to a community organisation.

4) Problems with bounties.

Kumamoto’s Uto Peninsula faced the problem of agricultural damage caused by Taiwan Squirrels, and, after the foundation of a committee by the relevant local government bodies, eradication measures are now being undertaken. When a bounty system was set up in Uki City there was a huge response, but the number of captures in the neighbouring Uto City, which had no bounty system, remained small. This indicates that a bounty system can be effective in stimulating an eradication program.

However it has been pointed out that at the beginning of the program, when the density of the target species is high, and when the species is found in an easily accessible place such as in and around homes, fields and workplaces, the system produces great effect, but when the target species becomes rarer or is found only in remote areas, the effect is limited.

After the introduced Javan mongoose was seen to be detrimentally affecting the population of the endemic Amami Woodcock¹², an eradication program with a bounty system was set up in 1993. For a while, capture was left in the hands of citizens and to increase the numbers captured the bounty was gradually raised from 2,200 yen to 5,000 yen (approx. \$20~\$50US). However the number of catchers who captured animals from the Woodcock’s prime habitat in the mountainous regions was limited. It was anticipated that this method would not lead to the complete eradication of the mongoose, so in 2004 the system was changed so that the work was entrusted to a specialist group, known as the Mongoose Busters, who were employed at a fixed rate.

These examples suggest that for eradication to succeed, the system may need to evolve to suit the progress of the eradication, or, because of the peculiarities of the affected area, may need to choose between

¹⁰ 要注意外来生物

¹¹ 特定外来生物

¹² *Scolopax mira*

alternative methods such as a bounty system and a specialist team approach.

Postscript: Concerning a government project review in June.

As one of four Ministry of the Environment programs under review, the Special Invasive Alien Species Eradication Stimulus Program was deemed in need of a “fundamental review.” The mongoose eradication program in Amami Oshima was one of the items mentioned. The success of the project resulted in a drop in numbers captured, but one member of the review board felt that this meant that the cost effectiveness was unreasonably low and demanded a switch to a high-value bounty system. Even among those in command of the program, the accumulation of data is still insufficient, it seems. There is still no clear view of what constitutes merit or demerit in a bounty system.

Attaining Aichi Biodiversity Target 3 and the switch to a green economy 1

target species	authority	year	bounty (yen)	main catchers	comments
Taiwan Squirrel	Uki City, Kumamoto	from 2010	¥ 800	farmers??	2747 head in 2010
	Inami-cho, Wakayama Saga Prefecture	2011	¥ 3,000		
	Iki City, Nagasaki	to 2008?	¥ 800	farmers?	Up to 10 traps were lent out. Bounties paid for animals caught in the traps. Little work was done in low density areas.
	Higashi-izu-cho, Shizuoka		¥ 400		
common Raccoon	Sakai City, Osaka	from 2009	¥ 2,000		Traps set in farmland within city limits
	Izumi City, Osaka				
	Kawachi-nagano City, Osaka		¥ 2,000		
	Tondabayashi City, Osaka	2009	¥ 2,000		Cages left for over 3 weeks
	Tottori Prefecture	2006?	¥ 10,000		
	Sakaide City, Kagawa	from 2010	¥ 3,000		Raccoon, Nutri and Civet Cat
	Shizuoka City, Shizuoka	from 2008?	¥ 5,000		
	Toyokawa City, Aichi		¥ 2,000		Bounty paid to catchers' organisation.
	Aridagawa-cho, Wakayama	from 2011	¥ 3,000		Cost shared by Wakayama prefecture and Aridagawa-cho
	Soeda-machi, Fukuoka	from 2012?			Handling fee paid to catchers
	Tsuwano-cho, Shimane	from 2005?	¥ 2,500		Bounty paid to licensed hunters
	Shizunai-cho, Hokkaido	from 2005?	¥ 2,000		
	Inami-cho, Wakayama	2011?	¥ 3,000		
	Mutsuzawa-machi, Chiba	from 2007?	¥ 2,000		
Sasebo City, Nagasaki	from 2010				
Wakayama Prefecture	from 2011				
Wakayama City	from 2011?				
Sanda City, Hyogo		¥ 5,000		Also Nutria	
Largemouth Bass, Bluegill	Shiga Prefecture	from 2006	¥ 300	(per kg)	Fishermen's costs are 350-450 yen.
Golden Apple Snail	Ampachi-cho, Gifu	2008	¥ 300	(per 5 litres)	Bounty donated to community funds
Javan Mongoose	Naze City, Kagoshima	1993 to 2003	¥ 2,200		
	Min. of Environment	from 2004	¥ 2,200		
		2001 to 2002	¥ 4,000		
		2003 to 2005	¥ 5,000		
			per head		