Tohoku Green Renaissance Projects

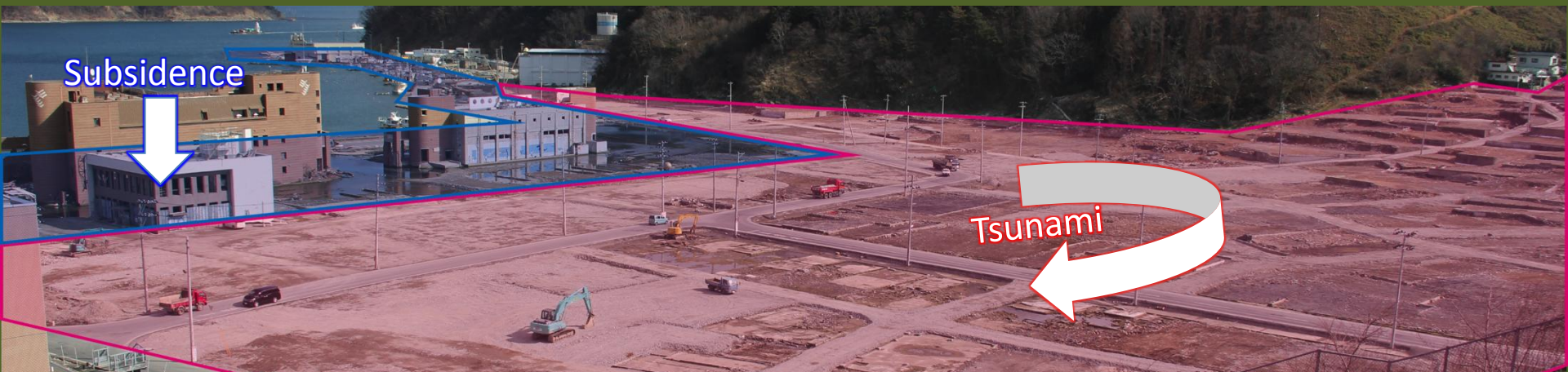
- Rebuilding from 3.11 Disaster -

NPO Tambo (Rice Paddies Network Japan) / Tohoku University

Dr. Tsubasa IWABUCHI, PhD

How shall we rebuild them?

- Devastated societies are heavily dependent on ecosystem services.
- Without restoration of ecosystems, rebuilding of society and livelihoods will not proceed.
- Caring for ecosystems is the key to sustainable rebuilding.
- Rebuilding by caring for the surrounding ecosystem will lead to restoration of ecosystems and development of a sustainable society.



The Tohoku Green Renaissance Project

We believe ecosystem services – connecting the ocean, forests and rice paddies with human well-being – are essential to rebuilding the Tohoku region.

The massive earthquake and tsunamis of 11th March 2011 caused catastrophic damage to our homes in the Tohoku region. Rebuilding society and the economy of this region is a priority for the whole of Japan and of pressing interest to the international community. The area devastated was a harmonious natural mixture of riparian land, forest and ocean, and historically the population of the area has optimized its ecosystem services for their livelihoods.

Rapid re-development of this area, without conducting an environmental impact assessment and giving adequate thought to the biodiversity of its rivers, rice paddies and ocean, may not only fail to repair the natural damage, but compound the losses already suffered. For this reason we believe a renaissance, or rebirth, of the area is necessary via "Green Rebuilding" to enrich the ecosystems and nurture biodiversity.

We affirm as citizens of the region that green rebuilding is necessary to regain and secure regional well being and to strengthen our harmonious relationship with nature.

22nd May 2011

(World Biodiversity Day)

海と田んぼからの グリーン復興宣言

生態系からの恵みを活かして

人・海・田んぼ そして森のつながりから復興を考える

2011年3月11日に発生した地震と津波により、私たちの住む東北地方は、甚大な被害を受けました。今やこの地域の社会と経済の復興は、国際的・日本全体の関心事になっています。

これまで「森は海の恋人」と呼ばれてきたように、海の恵みは、山、森、川、そして田んぼの営みのつながりにも、支えられてきました。今回の被災地の多くはこうした生態系の恵み（生態系サービス）を最大限に利用する生活をしてきた地域です。

今、できるだけ早い復興は共通した願いですが、環境への影響評価を行なうことなく、早急に山や森を削り、川や海、そして田んぼの生物多様性や生態系への配慮のない造成は、生態系サービスを低下させ、被災地以外にも多くの二次的な災害を生み出しかねません。

私たちは、この地の農林水産業が享受すべき将来の生態系からの恵みを見据え、海や田んぼの生態系の豊かさや、生物多様性を育む「グリーン復興」を行うことで、農林水産業と共に生きてきた地域が、より着実に、力強く復興すると信じます。

そして、地域の豊かさと強さにつながる生態系の回復力を助け、自然と社会が共生した復興を、ひとりひとりの市民として、その計画から積極的に関わり、一緒に支えていくことを宣言いたします。

2011年5月22日

海と田んぼからのグリーン復興プロジェクト

東北大学　生態適応グローバル COE
NPO法人　田んぼ
NPO法人　森は海の恋人
NPO法人　環境会議所東北
NPO法人　サステナブル・ソリューションズ ～小さな渦を育てる杜～

賛同団体（賛同企業·NGO·ネットワーク募集中）

地球環境パートナーシッププラザ（GEOC）、一般財団法人　mudef、国連大学サステイナビリティと平和研究所（UNU-ISP）、国連大学高等研究所いしかわ·かなざわオペレーティング·ユニット、財団法人　地球環境戦略研究機関（IGES）、特定非営利活動法人ラムサール·ネットワーク日本（ラムネットJ）、Think the Earthプロジェクト、特定非営利活動法人アースデイ·エブリデイ、一般社団法人　CEPA ジャパン、JBIB有志によるグリーン復興に向けたタスクフォース、日経BP環境経営フォーラム　有志によるタスクフォース

Tohoku Green Renaissance

We appeal that ecosystem services, through the connectivity between ocean, forest, rice paddies and human well-being, are essential for rebuilding.

The Tohoku Green Renaissance Projects

Affiliated Bodies

- Tohoku University, Ecosystem Adaptability GCOE
- Tambo (Rice Paddies Network Japan)
- Moriwa-Umino-Koibito
- Tohoku Chamber of Environment
- Sustainable Solutions

Supporters

- Institute for Global Environmental Strategies (IGES)
- Ramsar Network Japan
- Environment Outreach Centre (GEOC)
- MUDEF
- United Nations University Institute for Sustainability and Peace (UNU-ISP)
- United Nations University Institute of Advanced Studies Operating Unit Ishikawa/Kanazawa (UNU-IAS/OUIK)
- Think the Earth
- CEPA JAPAN
- Earth Day Everyday
- Japan Business Initiative for Biodiversity (JBIB) Tohoku Taskforce
- Nikkei BP Eco Management Forum Tohoku Taskforce
- EarthWatch Institute Japan
- Regional Environmental Planning Inc.
- Geoecological Conservation Network
- Eagao-Tsunagete
- **United Nations University Institute of Advanced Studies Secretariat for the International Partnership for Satoyama Initiative (UNU-IAS/IPSI)**

Goals of the Green Renaissance

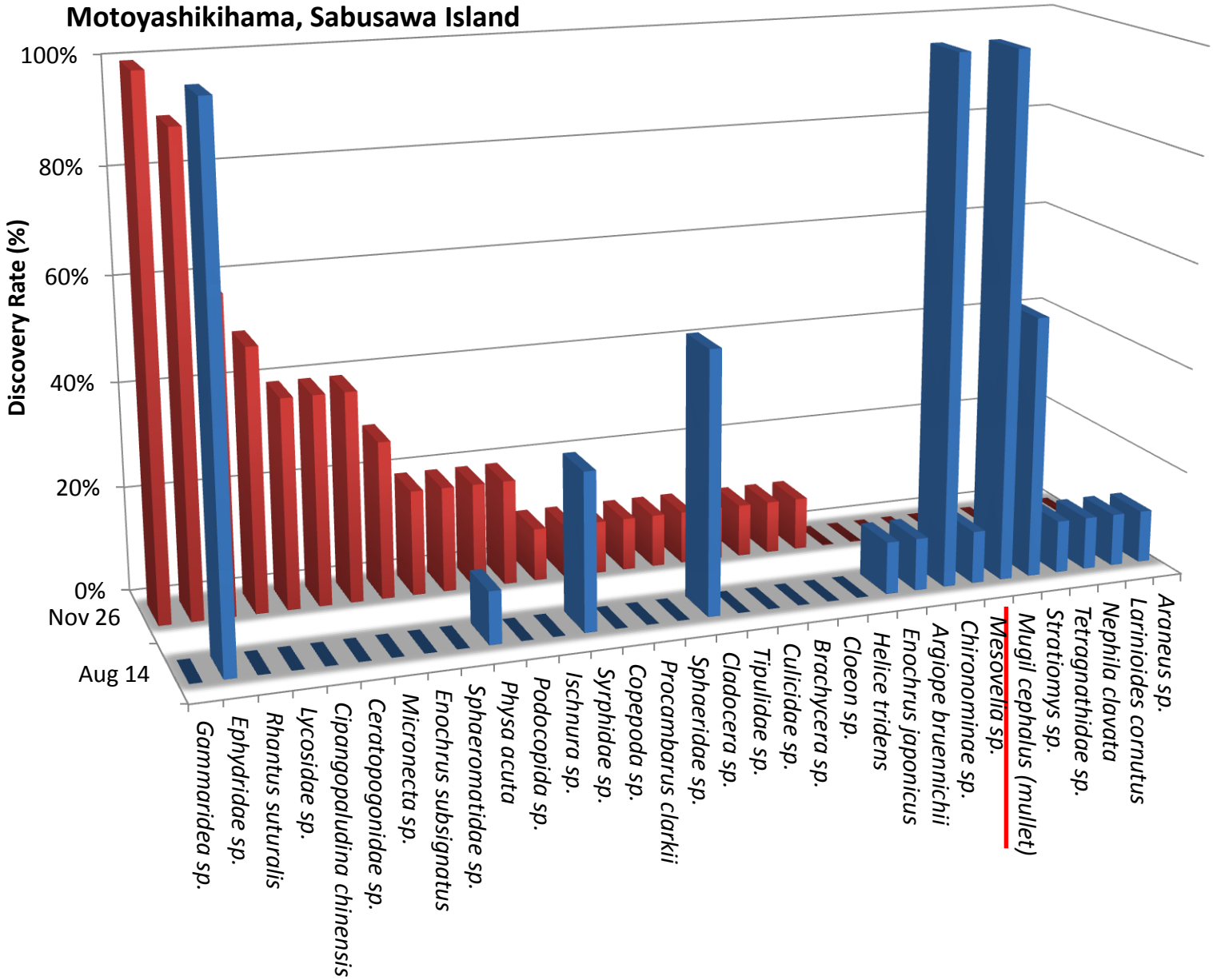
1. Land use that mitigates disaster risk through ecosystem services
   - *Restore coastal rice paddies. Land capability will be rejuvenated by the functions of wetlands. Other usage, including as a tidal flat or coastal wetland, would be considered for areas that are difficult to be restored (e.g., areas below sea level).*
   - *Mitigate disaster risk with floodplain, retarding basin, or coastal belt zone for wetland ('Sato'-wetland).*
   - *Financial support mechanism for land use that mitigates disaster, including offset, tax benefit (e.g., conservation easement), and insurance.*
2. Careful disaster prevention that does not reduce ecosystem services
   - *Recovery of ecosystem with local vegetation.*
   - *Land development with appropriate forest management and reduced sediment discharge, for conservation of marine ecosystems and securement of water quality.*
   - *Construction with care for marine biological resources and passages of animals. Mitigates tsunami or flood by smart construction including move ability of constructions and buildings that parry water flow.*
3. Sustainable activities with ecosystem services and their resilience
   - *When designing local industrial plans (agriculture, fishery, forestry, tourism, education), local culture and ecological resilience will be integrated into activities and shared with residents for consensus formation.*
   - *The values of beauty of ecological landscapes and local cultures.*
   - *Small-scale natural energy including biomass and small-scale hydroelectric power would be used to achieve energy self-sufficiency. Use of geothermal power will also be promoted.*
   - *Financial support mechanisms will be developed. This includes long-term pre-order or investment supporting both rebuilding and biodiversity via rich food cultures and local resources in Tohoku.*

Ecosystem Monitoring at Kesennuma, Miyagi

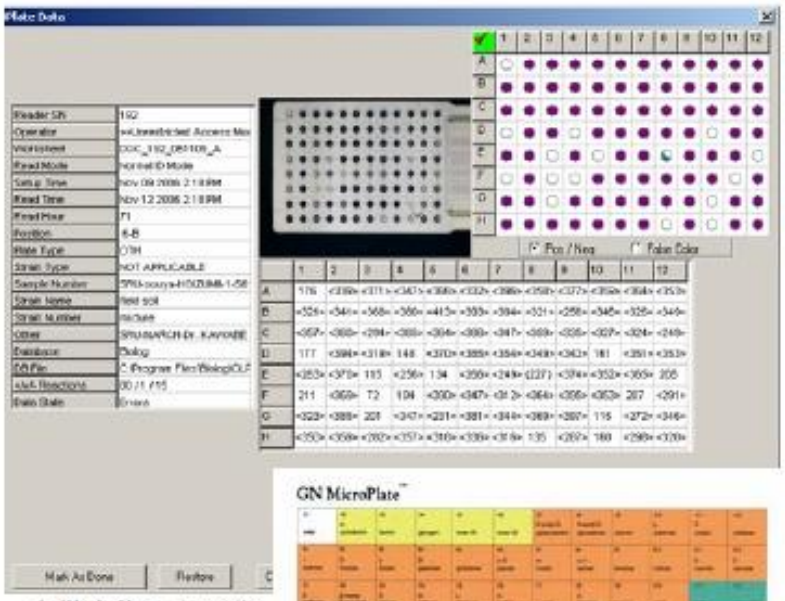
表2　気仙沼本吉町大谷で観察された水生昆虫

門	綱	目	種	Species Name	Apr 26	May 16	Jun 21	Jun 29
節足動物門	昆虫綱	甲虫目	チビゲンゴロウ	*Hydroglyphus japonicus*	○	○	○	○
			コミズムシ	*Sigara. substriata*			○	○
			イネクビホソハムシ(イネドロオイムシ)の幼虫	*Oulema oryzae*				○
			イネミズゾウムシ	*Lissorhoptrus oryzophilus*				○
			ヒメガムシ	*Sternolophus rufipes*			○	
			ゴマフガムシ	*Berosus punctipennis*				○
		カメムシ目	アメンボ	Aquarius paludum	○	○		○
			ヒメアメンボ	*Gerris latiabdominis*		○	○	○
			マツモムシ	*Notonecta triguttata*		○	○	○
			ミズカマキリ	*Ranatra chinensis*				○
			コオイムシ	*Appasus japonicus*				○
		トンボ目	オツネントンボ	*Sympecma paedisca*		○		○
			アキアカネ	*Sympetrum frequens*			○	○
		カゲロウ目	カゲロウ類の幼虫	Ephemeroptera sp.				○
		ハエ目	ミギワバエ科sp.	Ephydridae sp.	○	○	○	
			ニクバエ科 sp.	*Sarcophagidae sp.*				○
			キリウジガガンボ	*Tipula (Yamatotipula) aino*		○	○	
			ヒラタアブ sp.	*Syrphinae sp.*			○	
			ミズアブ科sp	*Stratiomys sp.*		○	○	
			ユスリカ亜科sp.	Chironominae sp.			○	○
				Total Number of Species Found	3	8	11	15

Ecosystem Monitoring in Sabusawa Island

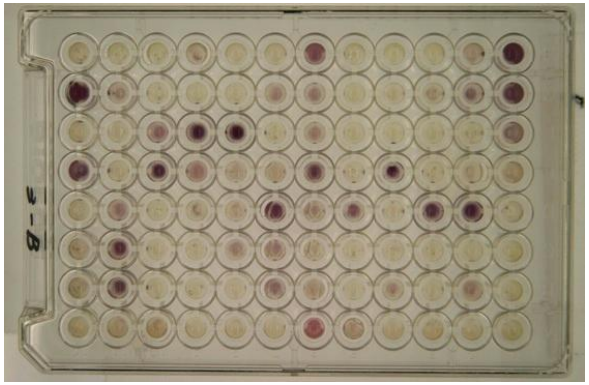


Biodiversity of soil can be quantitatively evaluated



↑微生物による分解状況をロボットで 48 時間連続観察

95 種類の有機物→

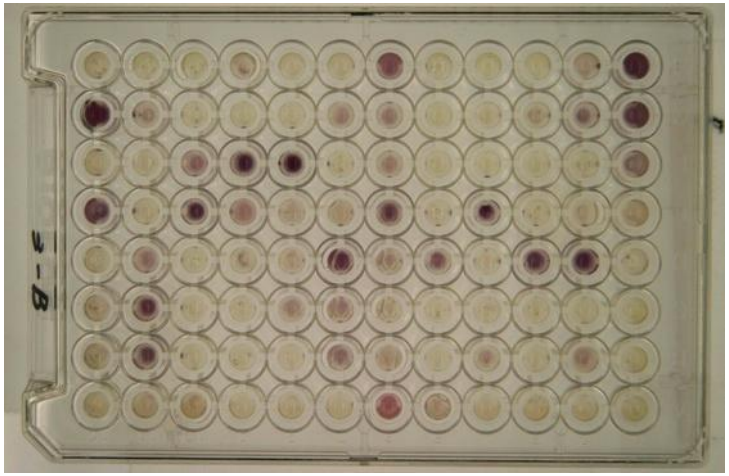


Over 1 trillion bacteria are found in 1 gram of soil.

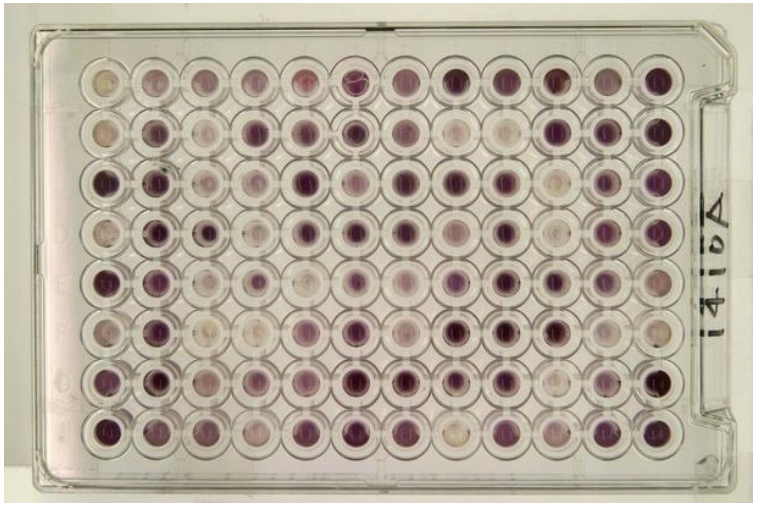
Microbial diversity is indirectly evaluated by scoring how many of 95 organic substances are decomposed.

Analysis with 15 min intervals for 48 hrs makes it possible to estimate the soil's vitality value.

BIOLOG



Biologically poor soil
(Replant failure)



Biologically rich soil

Microbial Diversity of the Soil from the Damaged Rice Paddies

http://www.dgc.co.jp/biodiversity.htm

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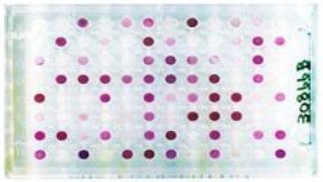
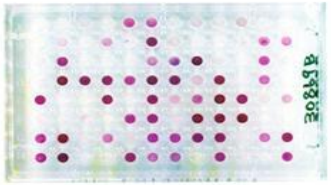
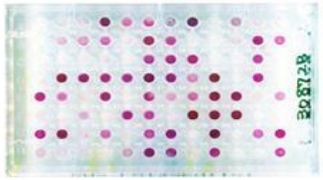
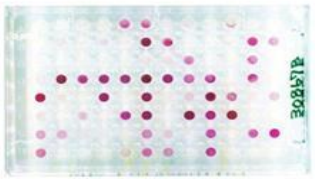
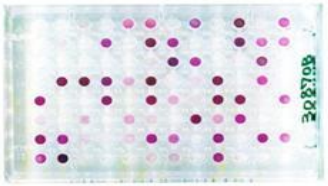
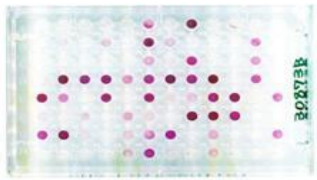
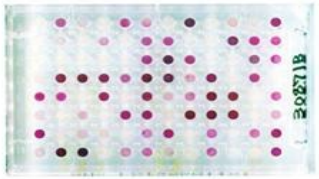
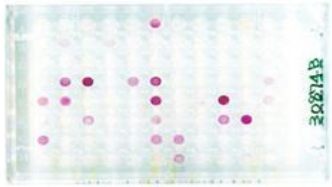
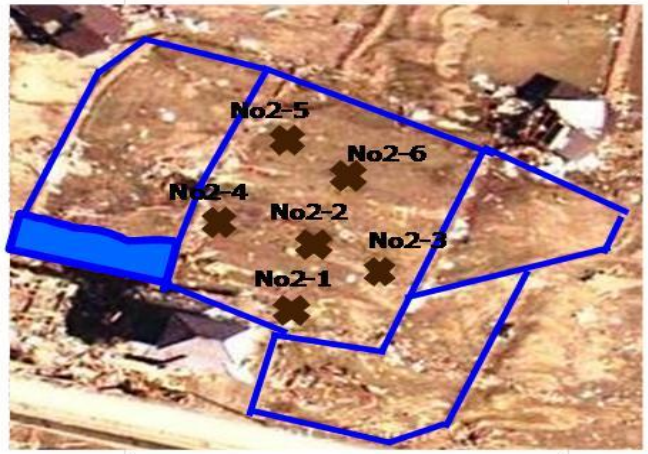
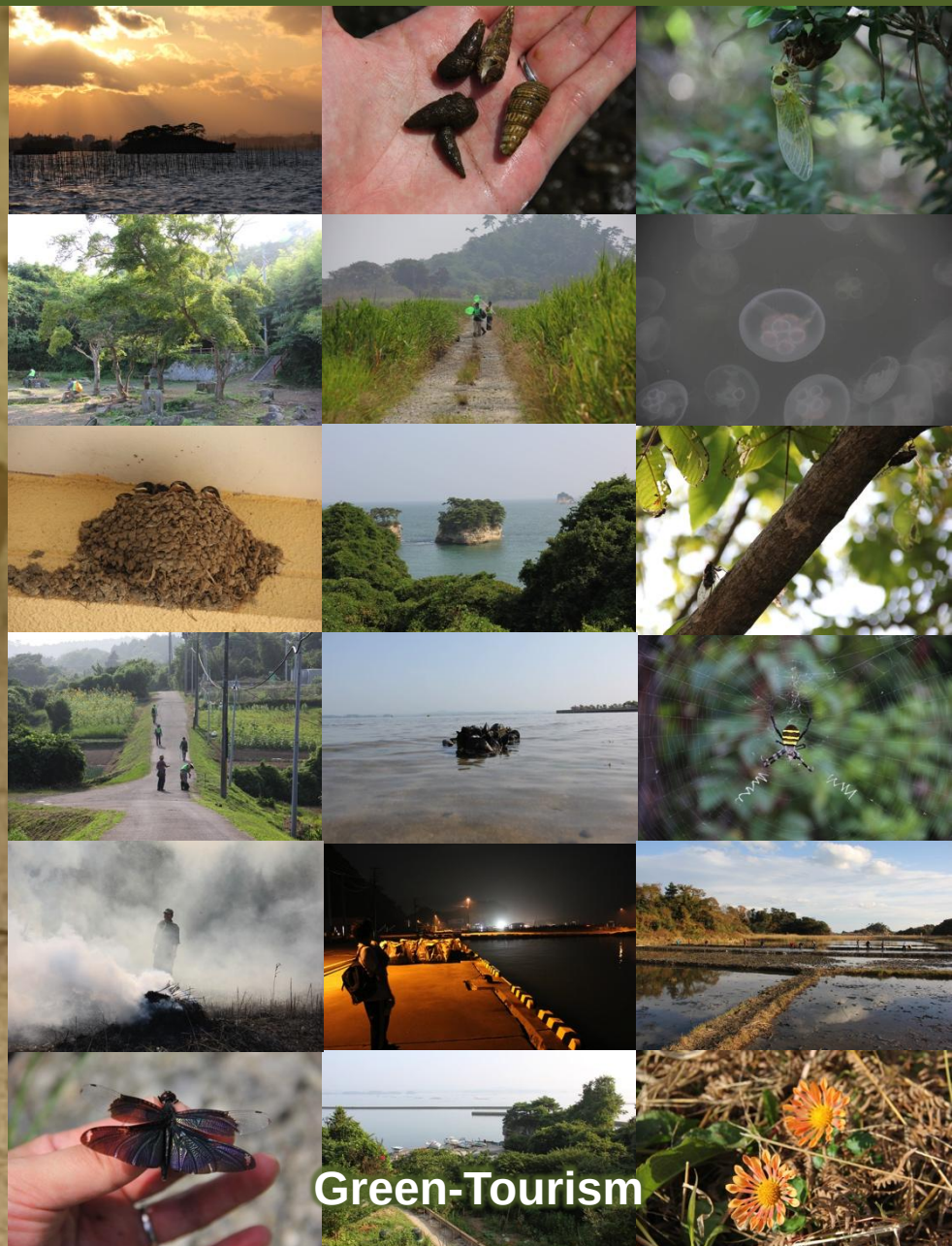
a	 945215	 913879	 926628
b	 664432	 819572	 580535
c	 395985	 910316	 309895



調査地点の土壌の様子

Economic Support

“Renaissance Rice”
(Fukkoh Mai)



Green-Tourism

Summary

- Winter-flooded rice paddy, which nurtures biodiversity, was indeed effective for rebuilding from the disaster.
- Many volunteers are eager to participate.
- Citizen-involved ecosystem monitoring seems to be effective in…
  - Assessing the influence of the disaster and dynamics of ecosystems since then.
  - Promoting environmental literacy.
- Rebuilding with full respect for independence of local communities
- Need to involve other stakeholders and be more involved in developing rebuilding designs